United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Cornell University
Agricultural
Experiment Station

Soil Survey of Dutchess County, New York

How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

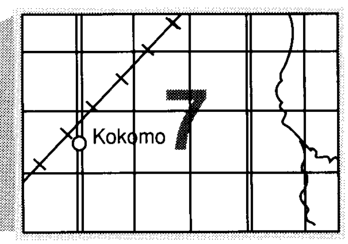
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

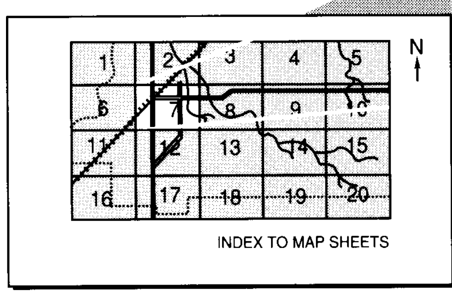
To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



MAP SHEET



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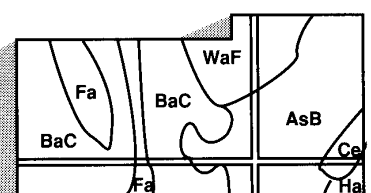
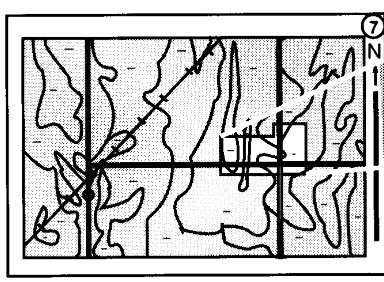


AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.



MAP SHEET

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

An earlier soil survey of Dutchess County was published by the United States Department of Agriculture in 1955 (USDA, 1955). This survey updates the earlier one and provides additional information and maps that show the soils in greater detail.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service and the Cornell University Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Dutchess County Soil and Water Conservation District. Partial funding for this survey was provided by the Dutchess County Legislature with support from the County Executive. Additional funding was also provided by New York State Department of Agriculture and Markets.

Cover: Area of Nassau-Rock Outcrop-Cardigan association in the foreground overlooking the Hudson River.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

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Issued 2001

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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State Conservationist
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Soil Survey of Dutchess County, New York

By Marjorie Faber, Soil Survey Party Leader, Natural Resources Conservation Service

Fieldwork by Roger J. Case, Marjorie Faber, Wendy A. Greenberg, Stephen J. Page, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with Cornell University Agricultural Experiment Station

General Nature of the County

DUTCHESS COUNTY is in the easternmost part of the mid-Hudson Valley in New York state (fig. 1). It covers 514,600 acres, or 804 square miles. The county has a population of 245,055. Poughkeepsie, the county seat, is in the west-central part of the county adjacent to the Hudson River and has a population of 29,757 (US. Department of Commerce, Bureau of Census, 1991).

This section gives general information about the county. It describes climate, early history, transportation facilities, geology, drainage, and water resources.

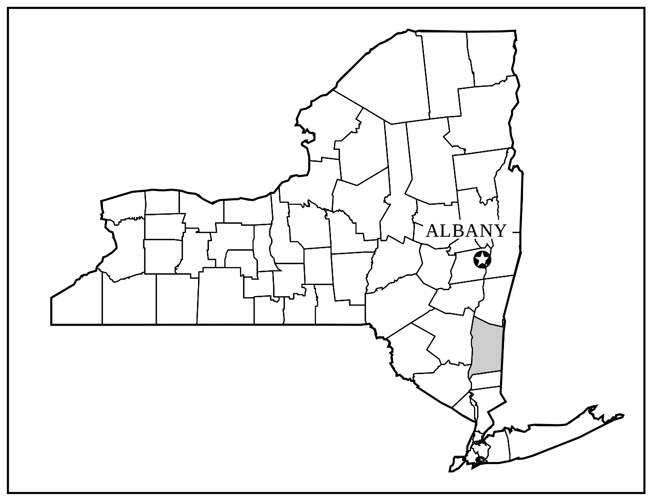

Figure 1.—Location of Dutchess County in New York.

Climate

In Dutchess County, winters are cold and summers are moderately warm with occasional hot spells. Mountains are markedly cooler than the main agricultural areas in the lowlands. Precipitation is well distributed throughout the year and is nearly always adequate for all crops. Winter snows occur frequently, occasionally as blizzards. Snow covers the ground much of the time.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Millbrook, New York, in the period 1951 to 1988. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 26 degrees F and the average daily minimum temperature is 16 degrees. The lowest temperature on record, which occurred at Millbroook on January 12, 1981, is -28 degrees. In summer, the average temperature is 68 degrees and the average daily maximum temperature is 80 degrees. The highest recorded temperature, which occurred on September 2, 1953, is 99 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 22 inches, or 55 percent, usually falls in April through September. The

growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 18 inches. The heaviest 1-day rainfall during the period of record was 5.68 inches on June 30, 1973. Thunderstorms occur on about 26 days each year, and most occur in summer.

The average seasonal snowfall is about 49 inches. The greatest snow depth at any one time during the period of record was 37 inches. On the average, 22 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in spring.

History and Development

Dutchess County was settled by the Delaware Indians, also known as the Algonquins. Several tribes, including the Mohicans and Wappingers, lived on the east side of the Hudson River. These Indians were sedentary, living in small permanent villages, growing crops such as maize and squash.

Dutch settlement of the county began in the late 1600s. English Quakers, from Rhode Island and Long Island, moved into the eastern part of the county in the 1740s, followed by other English settlers from New York City and Connecticut.

During the early period, Dutchess County included all of Putnam County and part of Columbia County. The county was divided into 13 patents (very large parcels) owned by influential New Yorkers. After 1750, settlers were allowed to buy and sell their own land. Villages were established and farms flourished throughout the county. By the American Revolution, the population of the county reached 20,000.

After the Revolution, most farmers grew wheat for New York City markets. The opening of the Erie Canal in 1825 ended the grain period, so farmers turned to beef. When the railroads began to carry milk to New York City in the 1860s, the dairy industry flourished.

Industries developed rapidly along the Hudson River corridor in the late nineteenth century resulting in a rapid population increase, especially in the manufacturing centers of Poughkeepsie and Beacon.

Over the years, southern Dutchess County rapidly became suburbanized because of its proximity to New York City. In all parts of the county, residential development increased with a consequent decline in dairy farms and orchards. While industry dominates in the southern and western parts of the county, agriculture is still important in the eastern section, in the Harlem Valley, and in the north.

Tourism is a major industry in the county, largely because of the number of historic mansions and estates along the Hudson River, especially in and around Hyde Park, which was the home of President Franklin D. Roosevelt.

Transportation Facilities

The major east-west roads in the county are Interstate 84 in the south, New York Routes 44 and 55 in the center, and New York Route 199 in the north. Major north-south roads are U.S. Route 9 in the west, the Taconic State Parkway in the center, and New York Route 22 in the east.

Along the Hudson River, the Hudson Division of Metro-North railroad provides passenger service from Poughkeepsie, New Hamburg, and Beacon to New York City. The Harlem Division of Metro-North connects the eastern communities of Dover Plains, Wassaic, and Pawling with New York City. Amtrak's Northeast passenger line provides service to Poughkeepsie and Rhinecliff. Conrail provides freight service for the western, southern, and eastern parts of the county.

Physiography and Geology

David S. Sullivan, Staff Geologist, Natural Resources Conservation Service, helped to prepare this section.

Dutchess County is located in southeastern New York state. It is bounded to the north by Columbia County, to the west by the Hudson River, to the south of Putnam County, and to the east by the State of Connecticut. The county is divided into two major physiographic units: the Valley and Ridge Province, and the New England Province. The Valley and Ridge Province includes the Hudson Lowlands and the Low Taconics. The Hudson Lowlands extend eastward 3 to 6 miles from the Hudson River. Maximum elevations there are 400 to 500 feet above mean sea level with 100 to 250 feet of relief (Isachsen, 1991). Bedrock is predominantly easily eroded sedimentary rock such as shale, graywacke and siltstone, which were deposited during the Cambrian and Ordovician Periods. To the east are the Low Taconics, which consist of Cambrian and Ordovician graywacke, metagraywacke, shale, phyllite, and schist. This 8 to 10 mile wide zone has 200 to 300 feet of relief, with maximum elevations of 500 to 750 feet.

The New England Province includes the High

Taconics, the Housatonic Highlands, and the Hudson Highlands. East of the Low Taconics, Clove Mountain and the region to the north make up the High Taconics. Maximum elevations there are between 1200 and 1400 feet, with 700 to 900 feet of relief. Bedrock of the mountainous regions is metamorphic in origin and includes schist, phyllite and metagraywacke. Layers of marble and sedimentary deposits of limestone and dolomite underlie the valleys. On the eastern edge of the county, the Housatonic Highlands have a maximum elevation of more than 1400 feet and almost 1000 feet of relief. The bedrock is Precambrian metasedimentary rocks and granite gneiss. To the south, the Hudson Highlands form the remaining part of the New England Province in Dutchess County. South Beacon Mountain has a maximum elevation of 1602 feet and a local relief of 1200 to 1300 feet. Bedrock is Proterzoic biotite and hornblende granite gneiss and is resistant to erosion (Fisher, 1970).

Glacial Geology

Dutchess County was entirely covered by glacial ice during the last ice age. Despite evidence of four major advances and retreats of the continental ice sheet in other parts of the United States, only the last stage “the Wisconsinan” is evident in New York (Isachsen, 1991). A wide variety of stratified and unstratified material was deposited in association with the glacier during both advance and retreat phases. Unstratified deposits within the county called till are generally compact (dense) and clay rich. The till contains abundant rock clasts; however, they are not generally in contact with each other. This type of till is called hardpan and may contain isolated layers of stratified sand and gravel. The till is generally thin in the hilly regions where there are scattered bedrock exposures, but may be tens of feet thick adjacent to bedrock valley walls. Examples of soils formed in glacial till include Bernardston, Georgia, Hollis, Nassau and Nellis (Cline; Marshall, 1976).

Stratified glacial material is deposited in a fluvial or lacustrine environment. If sand and gravel are deposited immediately adjacent to the glacier, as in the formation of kames and eskers, the deposits are called ice-contact. Ice-contact kames can be seen in the town of LaGrange and at Moores Hill. Sediment deposit by a meltwater stream flowing away from the glacier is called outwash. Outwash was deposited near the headwaters of Wappingers Creek and Sprout Creek, as well as in the Pawling Valley. Alton and Hoosic Area soils are examples of soils formed in these deposits. Streams transporting sediment into a lake either deposit it in the form of a delta as at Manchester Bridge, or carry it deeper into the lake and deposit it as lacustrine sands, silts, and clays as seen southwest of Rhinebeck. Lacustrine deposits occurred in Glacial Lake Albany as well as in smaller glacial lakes in Fishkill Creek, Sprout Creek, Wappingers Creek, and Crum Elbow Creek. An example of soils formed in a lacustrine environment is Hudson soils.

The Late Wisconsinan glacier began to retreat from the Terminal Moraine on Long Island about 12,000 years ago (Isachsen, 1991). As it retreated, the glacier readvanced slightly from time to time depositing a series of ice margins (moraines) of glacial drift. Between 17,000 and 18,000 years ago the glacier terminus had retreated to the northern slope of the Hudson Highlands where it deposited the oldest moraine in Dutchess County, the Shenandoah Mountain. It extends eastward to Honess Mountain, Greenhaven Prison, and Poughquag. Going north from there, the next ice-margin is the Poughkeepsie Moraine. It has more than 90 feet of relief, is composed of stratified drift, and extends westward from James Baird State Park to the city of Poughkeepsie. The Hyde Park Moraine is the next ice-margin to the north. It has 170 feet of relief and contains stratified drift and associated outwash. This moraine traces east from Hyde Park to Salt Point. Next to the north is the Pine Plains Moraine, which is named for exposures of stratified drift in the town of Pine Plains. This moraine is traced for about 7 miles from northwest and north of Stissing Mountain to the Village of Pine Plains. The final moraine, located in the northwest corner of the county, is the Red Hook Moraine. This name refers to three closely related ice-margin positions east of the village of Red Hook. The ice margins previously described bend northeast to southwest. This moraine complex extends northeast from Rhinebeck approximately 20 miles to Glenco Mills in Columbia County.

As the glacier continued to retreat, Glacial Lake Albany gradually expanded northward up the Hudson Valley remaining in contact with the terminus of the retreating glacier. This large glacial lake remained in existence for at least 4,000 to 5,000 years (Isachsen, 1991). Evidence for this expansion can be seen by the sequence of large deltas formed in Lake Albany by meltwater streams at Manchester Bridge, Vassar, Hyde Park, Rhinebeck, and Red Hook.

Drainage

Most of Dutchess County is in the Hudson River drainage basin. The eastern portion of the county is in the Ten Mile River watershed, which flows towards the Housatonic River in Connecticut.

Many smaller streams drain the northwestern towns

of Dutchess County. These streams include the White Clay Kill, Saw Kill, Mudder Kill, Rhinebeck Kill, Landsman Kill, Crum Elbow Creek, and the Maritje Kill. Fall Kill Creek and the Casper Kill Creek have sizeable watersheds in the Poughkeepsie area. All of these streams flow into the Hudson River.

The watershed of the Wappinger Creek, with its two major tributaries, the East Branch and Little Wappinger Creek, covers over twenty-five percent of the county (Dutchess Co. Department of Planning, 1985). The Wappinger Creek drains the central part of the county and enters the Hudson River in New Hamburg. There are extensive sand and gravel aquifer systems related to this watershed.

The watershed of the Fishkill Creek drains the southern part of the county. Major tributaries of the Fishkill Creek are the Whortlekill Creek, the Sprout Creek, and the Jackson Creek. The Fishkill Creek watershed enters the Hudson River in Beacon. The largest sand and gravel aquifer system in Dutchess County lies within the Fishkill Creek basins.

The Ten Mile River drains the Harlem Valley and the Oblong Valley and flows into Connecticut east of Wingdale. Major tributaries from the north are the Wassaic Creek, the Amenia Creek, and the Webatuck Creek. The Swamp River flows north from Pawling and joins the Ten Mile River in Dover. There are extensive wetland systems associated with the deep sand and gravel aquifers located in the Harlem Valley and the Oblong Valley.

Most of the streams in the county are of fairly low gradient. There are broad floodplains and linear wetlands associated with the major streams in the county.

Water Supply

Dutchess County has an adequate supply of groundwater and surface water supplied by numerous streams, wetlands, aquifers, and ponds. Water uses include agricultural, industrial, commercial, municipal, and domestic along with recreation, fisheries, and wildlife habitat.

The largest source of water (surface water) is the Hudson River, which forms the western boundary of the county. Poughkeepsie, the largest city, is supplied with Hudson River water. In emergency situations the Chelsea Pump Station in the southwestern part of the county pumps millions of gallons of Hudson River water into the Catskill Aqueduct for New York City. The villages of Hyde Park and Rhinebeck also tap into the Hudson River for their water supply.

Wells placed in deep, high yield sand and gravel aquifers supply most communities. Industries draw millions of gallons of water daily from these aquifers. Outwash terraces along the Ten Mile River, Sprout/ Fishkill Creeks, Wappinger Creek, and the Crum Elbow Creek are prime high yield aquifer systems. Private wells serve most homes outside the community centers and in the rural areas.

Deep glacial till and bedrock are other major sources of groundwater. Glacial till wells vary greatly in yield depending on the depth recharge area and composition of the till deposit. Wells in bedrock generally yield adequate water for residential uses, but the yields vary greatly depending on well depth, rock density, rock fractures, and geologic faults.

Groundwater hardness and the presence of sulphur or iron is a nuisance in some areas. In general, the quality of surface and groundwater is good; however, contamination is increasing as the county's population grows.

Significant amounts of water are used in the irrigation of orchards: specialty crops such as raspberries, blueberries, or strawberries; and truck crops such as potatoes, sweet corn, and melons. Most of this irrigation water is supplied from ponds excavated into the water table of sand and gravel aquifers.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil (fig. 2). The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus,

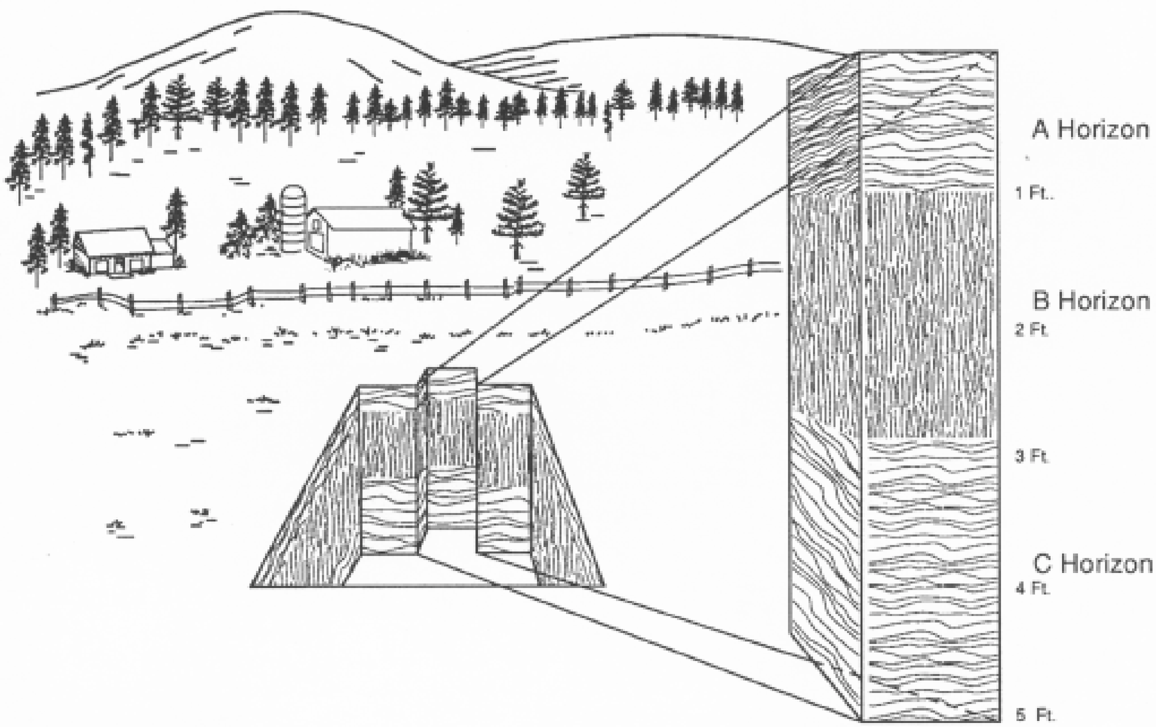

Figure 2.—Diagram of the horizons in a soil profile.

during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information,

production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties, but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

In some areas along the borders of Dutchess County, the names of the general soil map units do not match those of adjoining counties. These discrepancies exist because of differences in the detail of mapping, changes in soil classification, and differences in the proportions of the same soil in adjoining counties. In those areas the units in the adjoining counties contain similar kinds of soils.

Soil Descriptions

1. Hudson-Vergennes-Raynham

Dominantly nearly level to steep, very deep, moderately well drained and somewhat poorly drained, medium to moderately fine textured soils; on lowlands and dissected lake plains

This unit consists of soils that formed in glaciolacustrine deposits with a medium to high content of silt and clay. The landscape is generally gently sloping and is dissected by deep drainageways from the main north-south terrace adjacent to the Hudson River. Slopes are dominantly 3 to 15 percent but are as much as 45 percent in some dissected areas, and as low as 0 percent in lowlands.

This unit covers about 3 percent of the county. The unit is about 25 percent Hudson and similar soils, 25 percent Vergennes and similar soils, 15 percent Raynham and similar soils, and 35 percent minor soils.

The Hudson soils are moderately well drained and have a silt loam surface. The subsoil and substratum are fine textured throughout. Permeability in the subsoil and substratum is slow or very slow. The seasonal high water table is between depths of 1.5 and 2 feet in the spring. They are mostly on broad, irregularly shaped lowlands. The steep areas are generally on the side slopes of drainageways. Slopes range from 3 to 45 percent.

The Vergennes soils are moderately well drained and have a silty clay loam surface layer. The subsoil and substratum is clay with thin layers of silt. Permeability in the subsoil and substratum is slow or very slow. The seasonal high water table is between depths of 1 and 3 feet in the winter and spring. They are mostly on broad, irregularly shaped lowlands. The steep areas are generally on the side slopes of drainageways. Slopes range from 3 to 45 percent.

The Raynham soils are somewhat poorly drained and have a silt loam surface layer. The subsoil and substratum is silt loam. Permeability is moderate and moderately slow in the subsoil and slow in the substratum. The seasonal high water table is between depths of 0.5 and 2 feet in the winter and spring. Raynham soils are on broad lowlands. Slopes range from 0 to 3 percent.

Of minor extent are Kingsbury, Rhinebeck, Livingston, Canandaigua, Unadilla, Nassau, Cardigan, Knickerbocker, Fredon, Scio, Hydraquents and Medisaprists, and Dutchess soils. Kingsbury and Rhinebeck soils are somewhat poorly drained and throughout the unit. Very poorly drained Livingston soils and poorly drained and very poorly drained Canandaigua soils are in drainageways and slightly concave or ponded areas. Well drained Unadilla soils and moderately well drained Scio soils are in areas transitional to sandier outwash areas. Shallow, somewhat excessively drained Nassau soils, moderately deep, well drained Cardigan soils and very deep, well drained Dutchess soils are in areas with shale bedrock. Somewhat excessively drained

Knickerbocker soils and somewhat poorly drained Fredon soils are in areas of sandy glacial outwash. Hydraquents and Medisaprists are in very poorly drained tidal marshes adjacent to the Hudson River.

Most areas of this unit are used for cultivated crops, hay, or residential development. The steep areas are wooded and are actively eroding. Some of the soils in this unit are highly erodible and require cross slope tillage, conservation tillage, careful crop rotations, and maintenance of permanent sod. Most areas used for farming need drainage.

Slow permeability, a seasonal high water table, clayey texture, slope, erodibility, and frost action are the main limitations if this unit is used for community development.

Some areas of this unit are managed woodland. Timber harvesting causes erosion, especially on steep slopes.

2. Hoosic-Wayland-Copake

Dominantly nearly level to steep, very deep, somewhat excessively drained and well drained medium textured soils and very deep, very poorly drained medium textured alluvial soils; on outwash plains, in lowlands and along streams

This unit consists of soils formed in glacial outwash along the large tributary valleys of the Hudson River and alluvial deposits adjacent to the major streams of the county. Slopes range from 0 to 45 percent.

This unit covers about 14.5 percent of the county. The unit is about 35 percent Hoosic soils, 15 percent Wayland soils, 15 percent Copake soils, and 35 percent minor soils.

The Hoosic soils are somewhat excessively drained and have a gravelly loam surface layer. The subsoil is medium to moderately coarse textured and the substratum is coarse textured. They formed in water sorted materials derived mainly from shale and quartzite. Permeability in the Hoosic soils is moderately rapid or rapid in the subsoil and very rapid in the substratum. Slopes range from 0 to 45 percent.

The Wayland soils are very poorly drained and have a silt loam surface layer. The subsoil is medium to moderately fine textured and the substratum is medium textured. Wayland soils formed in alluvial deposits adjacent to streams and are subject to frequent, brief to long flooding, in the fall, winter, and spring. Permeability is slow in the subsoil and substratum. Slopes range from 0 to 3 percent.

The Copake soils are well drained and have a gravelly silt loam surface layer. The subsoil is medium textured and the substratum is coarse textured. Copake soils formed in water sorted materials derived mainly from limestone and schist. Permeability is moderate or moderately rapid in the subsoil and very rapid in the substratum. Slope ranges from 0 to 45 percent.

Soils of minor extent are Knickerbocker, Fredon, Halsey, Carlisle, Palms, Wappinger, Pawling, and Linlithgo. Knickerbocker soils are well drained and are in areas where the outwash is sandy in the surface and subsoil. Somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils are in drainageways and depressions in outwash areas. Carlisle and Palms are very poorly drained organic soils and are in concave areas where water is impounded. Well drained Wappinger soils are on broad flood plains subject to common, brief flooding. Moderately well drained Pawling soils and somewhat poorly drained Linlithgo soils are on low areas of flood plains and are also subject to common, brief flooding.

Most of the Hoosic and Copake areas of this unit are used as cropland, hayland, or residential development. Most of the Wayland areas of this unit are wooded or are in water-tolerant brush and sedges. The Hoosic and Copake soils are suitable for community development; however, installation of septic tank absorption fields is a problem because of the poor filtering capacity of these soils. Wayland soils are not suited to community development because of flooding.

3. Farmington-Galway-Stockbridge

Dominantly nearly level to very steep, shallow to very deep, somewhat excessively drained to moderately well drained medium textured soils formed in glacial till; on uplands

This unit consists of soils on hills influenced by the underlying limestone bedrock. Common outcrops of limestone and marble occur. Slopes range from 1 to 65 percent.

This unit makes up about 8 percent of the county. The unit is about 20 percent Farmington soils, 15 percent Galway soils, 15 percent Stockbridge soils, and 50 percent rock outcrop and minor soils.

The Farmington soils are well drained to somewhat excessively drained and are 10 to 20 inches deep to limestone bedrock. They have a loam surface layer and medium textured subsoil. Farmington soils are on hilltops and hillsides. Permeability is moderate throughout. Slopes range from 1 to 65 percent.

The Galway soils are well drained and moderately well drained and are 20 to 40 inches deep to limestone bedrock. They have a gravelly loam surface layer and the subsoil and substratum are medium textured throughout. Galway soils are on hilltops and toeslopes of hills. Permeability is moderate in the subsoil and

substratum. The seasonal high water table is between depths of 1.5 to 3 feet in the spring. Slopes range from 1 to 45 percent slopes.

The Stockbridge soils are well drained, very deep and have a silt loam surface layer.

The subsoil and substratum is medium textured throughout. They are on hillsides and hilltops. Permeability is moderate in the subsoil and moderately slow or slow in the substratum. Slopes range from 2 to 45 percent.

Soils of minor extent are Sun, Georgia, Massena, Copake, Nassau, Cardigan, Dutchess, and rock outcrop. Poorly drained and very poorly drained Sun soils are in depressions and drainageways. Moderately well drained Georgia soils are on concave footslopes. Somewhat poorly drained Massena soils are on gently sloping and nearly level areas. Copake soils are in areas of well drained outwash. Shallow somewhat excessively drained Nassau soils, moderately deep well drained Cardigan soils, and very deep well drained Dutchess soils are in areas where the bedrock is shale. Rock outcrop is in areas of exposed folded and tilted limestone.

Areas of this unit are used as woodland, pastureland, or residential development. Depth to bedrock and steep slopes are the main limitations if this unit is used for community development.

4. Cardigan-Dutchess-Nassau

Dominantly nearly level to very steep, very deep to shallow, well drained and somewhat excessively drained, medium textured soils that formed in glacial till; on uplands

This unit consists of soils on hills formed in glacial till influenced by the underlying shale bedrock. The landscape generally consists of folded bedrock ridges oriented north-south. Outcroppings of shale bedrock are common, particularly in steep and very steep areas. Slopes range from 1 to 70 percent.

This unit makes up about 32 percent of the county. The unit is about 25 percent Cardigan soils, 20 percent Dutchess soils, 10 percent Nassau soils, and 45 percent minor soils and rock outcrop.

The Cardigan soils are well drained and 20 to 40 inches deep to shale bedrock. They have a channery silt loam surface layer, and the subsoil is medium textured. Permeability is moderate throughout the soil. Slopes range from 1 to 45 percent.

The Dutchess soils are well drained, very deep, and have a silt loam surface layer. The subsoil and substratum is medium textured throughout. Permeability is moderate throughout the soil. Slopes range from 1 to 30 percent.

The Nassau soils are somewhat excessively drained and are 10 to 20 inches deep to shale bedrock. They have a channery silt loam surface layer and the subsoil is medium textured. Permeability is moderate throughout the soil. Slopes range from 1 to 70 percent.

Soils of minor extent are Sun, Palms, Carlisle, Canandaigua, Bernardston, Massena, Georgia, Farmington, Galway, Stockbridge, and rock outcrop. Poorly drained and very poorly drained medium textured Sun soils and moderately fine textured Canandaigua soils are in drainageways and depressions. Palms and Carlisle are organic soils and are in concave areas where water is impounded. Palms soils have an organic layer 16 to 51 inches thick and Carlisle soils have an organic layer thicker than 51 inches. Well drained Bernardston soils have a dense substratum and are on hillsides. Moderately well drained Georgia soils are on concave footslopes and somewhat poorly drained Massena soils are on gently sloping and nearly level areas. Shallow well drained to somewhat excessively drained Farmington soils, moderately deep well drained and moderately well drained Galway soils, and very deep well drained Stockbridge soils are in areas where the underlying bedrock is limestone. Rock outcrop is in areas of exposed folded and tilted shale.

Most areas of this unit are used as cropland, pastureland, woodland, or residential development. Slope, depth to bedrock, and common rock outcrops are the main limitations in the areas used for community development.

5. Bernardston-Pittstown

Dominantly gently sloping to steep, very deep, well drained and moderately well drained, medium textured soils with a dense substratum; on uplands

This unit consists of soils on hilltops and hillsides that formed in glacial till with a large content of shale and phyllite. Slopes range from 3 to 45 percent (fig. 3).

This unit makes up about 4 percent of the county. The unit is about 50 percent Bernardston soils, 25 percent Pittstown soils, and 25 percent minor soils.

The Bernardston soils are well drained, very deep with a silt loam surface layer. The subsoil and substratum is medium textured throughout. They have a firm dense substratum generally at a depth of 15 to 30 inches, but it is closer to the surface on some steep, eroded slopes. The substratum restricts root growth. The seasonal high water table is perched above the dense substratum during the spring. The permeability is moderate in the subsoil and slow in the dense substratum. Slopes range from 3 to 45 percent.

The Pittstown soils are moderately well drained, very deep, with a silt loam surface layer. The subsoil and substratum is medium textured throughout. They

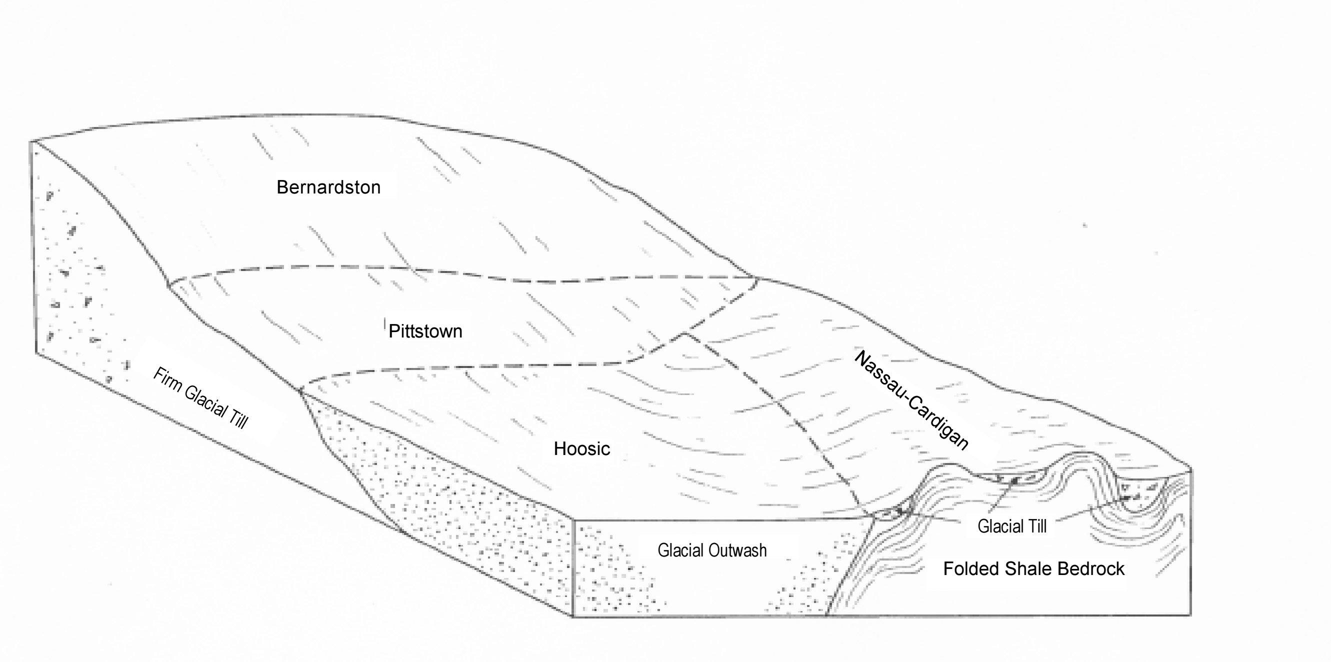

Figure 3.—Typical pattern of Bernardston-Pittstown general soil map unit and Nassau-Cardigan complex on uplands and Hoosic gravelly loam on outwash plains.

have a firm dense substratum at a depth of 15 to 25 inches that restricts root growth. The seasonal high water table is perched above the dense substratum in the winter and spring. The permeability is moderate in the subsoil, and slow or moderately slow in the dense substratum. Slopes range from 3 to 25 percent.

Soils of minor extent are Punsit, Nassau, Cardigan, Dutchess, Canandaigua, and Sun. Punsit soils are somewhat poorly drained and are lower on the landscape than Bernardston and Pittstown soils. Shallow somewhat excessively drained Nassau soils and moderately deep well drained Cardigan soils are on bedrock controlled landscapes. Well drained Dutchess soils are in areas where the substratum is not dense. Poorly drained and very poorly drained fine textured Canandaigua soils and medium textured Sun soils are in depressions and drainageways.

Some areas of this unit are used for growing cultivated crops and hay. Other areas are used as woodland or residential development. Drainage is common in farmed areas. Stripcropping and cross slope tillage help to reduce erosion on sloping areas.

Erosion is a hazard in woodlots managed for timber.

Slow percolation rates in the substratum, the seasonal high water table, and slope are the main limitations in the areas used for community development.

6. Charlton-Chatfield-Hollis

Dominantly gently sloping to very steep, very deep to shallow, well drained and somewhat excessively drained, medium and moderately coarse textured soils; on uplands

This unit consists of soils formed in glacial till dominated by granite, gneiss, and schist. The landscape consists of hillsides and hilltops, with very complex topography and steep micro-relief. This unit is in the southeastern part of the county. Bedrock exposures, with very steep to nearly vertical bedrock escarpments, are a common part of the landscape. Slopes are dominantly 5 to 30 percent, but range from 1 to 70 percent.

This unit makes up about 10 percent of the county. The unit is about 25 percent Charlton soils, 25 percent Chatfield soils, 15 percent Hollis soils, and 35 percent soils of minor extent and rock outcrop (fig. 4).

The Charlton soils are very deep, well drained with a loam surface texture. The subsoil and substratum is medium textured throughout. They are on hillsides and hilltops. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 1 to 45 percent.

The Chatfield soils are somewhat excessively drained and well drained and are 20 to 40 inches deep to granite, gneiss, or schist bedrock. They have a fine sandy loam surface layer. The subsoil is medium textured and the substratum is moderately coarse textured. Chatfield soils are on hillsides and hilltops. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 1 to 70 percent.

The Hollis soils are well drained and somewhat excessively drained and are 10 to 20 inches deep to

granite, gneiss or schist bedrock. They have a loam surface layer with a medium textured subsoil. Hollis soils are on the sides and tops of hills. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 1 to 70 percent.

Soils of minor extent are Sun, Massena, Georgia, Nassau, Cardigan, Dutchess, and rock outcrop. Very deep poorly drained and very poorly drained Sun soils are in depressions and drainageways. Very deep somewhat poorly drained Massena soils are in slight depressions. Very deep moderately well drained Georgia soils are on concave footslopes. Shallow somewhat excessively drained Nassau soils, moderately deep well drained Cardigan soils, and very deep well drained Dutchess soils are in areas where the bedrock is shale. Rock outcrop is in areas of exposed folded and tilted granite, gneiss, and schist.

Most areas of this unit are wooded or are used for community development. A few areas are used for hay, pastures, and cultivated crops. Depth to bedrock, scattered bedrock outcrops, and steep slopes are the main limitations in areas used for agriculture and community development.

7. Stockbridge-Georgia

Dominantly nearly level to steep, very deep, well drained and moderately well drained, medium textured soils; on uplands

This unit consists of soils on hilltops and hillsides that formed in glacial till with a moderate to large content of lime derived from local limestone bedrock. Slopes range from 0 to 45 percent.

This unit makes up about 11 percent of the county. The unit is about 50 percent Stockbridge soils, 15 percent Georgia soils, and 35 percent minor soils.

The Stockbridge soils are well drained, very deep and have a silt loam surface layer. The subsoil and substratum is medium textured throughout. They are on hilltops and hillsides. Permeability is moderate in

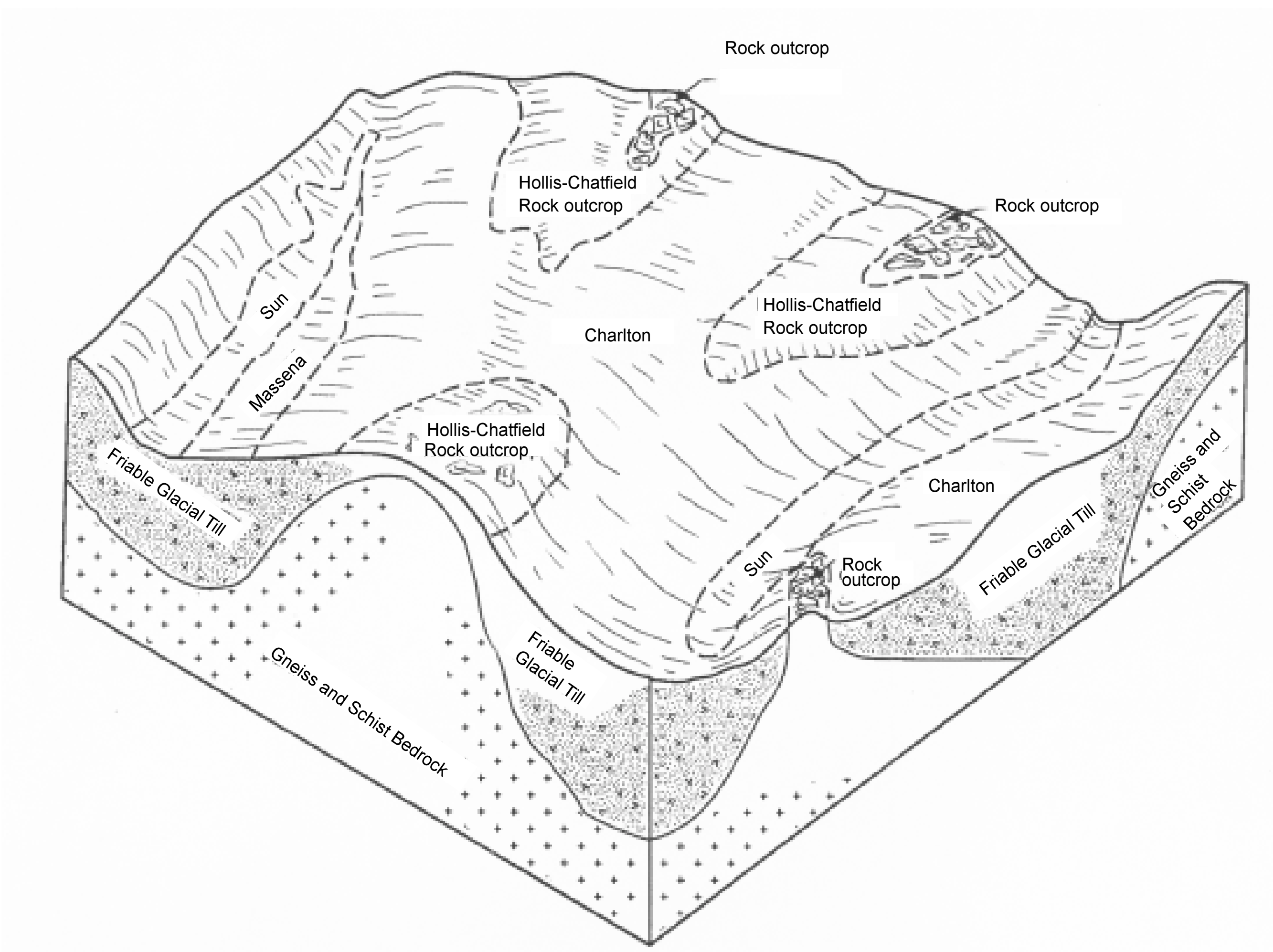

Figure 4.—Typical pattern of soils and parent material in the Charlton-Chatfield-Hollis general soil map unit.

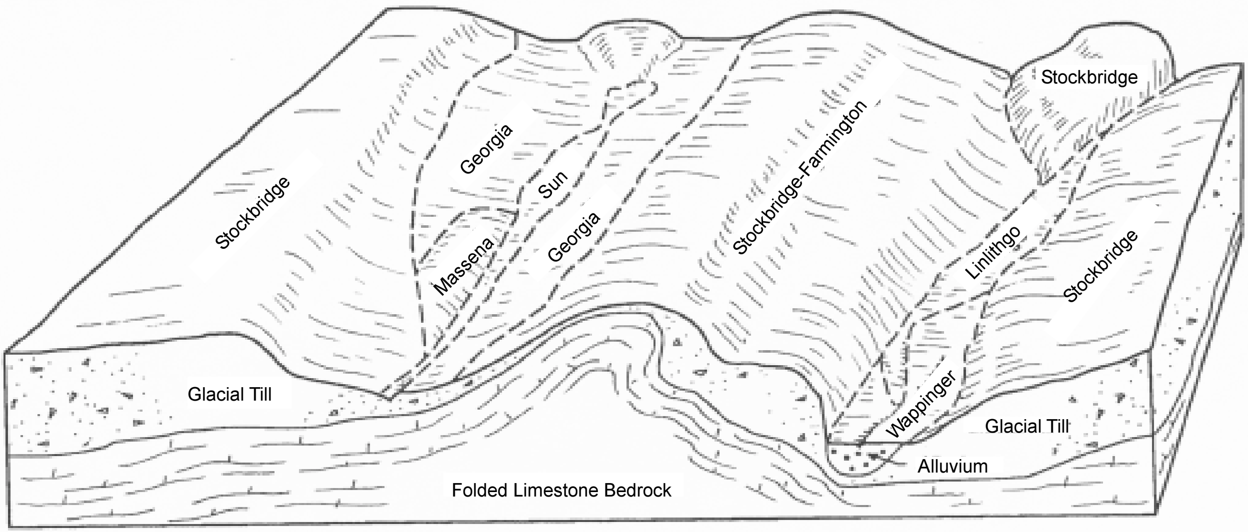

Figure 5.—Typical pattern of soils and underlying material in the Stockbridge-Georgia general soil map unit.

the subsoil and moderately slow or slow in the substratum. Slopes range from 2 to 45 percent.

The Georgia soils are moderately well drained, very deep and have a silt loam surface layer. The subsoil is medium to moderately coarse textured and the substratum is moderately coarse textured. They are on hillsides and concave footslopes. Permeability is moderate in the subsoil and moderately slow or slow in the substratum. The seasonal high water table is at a depth of 1.5 to 3 feet from November to May. Slopes range from 0 to 15 percent.

Soils of minor extent are Massena, Sun, Bernardston, Pittstown, Farmington, Galway, Wappinger, and Linlithgo (fig. 5). Somewhat poorly drained Massena soils are on gently sloping and nearly level areas. Poorly drained and very poorly drained Sun soils are in depressions and along drainageways. Well drained Bernardston soils and moderately well drained Pittstown soils have dense substrata. Shallow Farmington soils are in areas where the underlying limestone bedrock is at a depth between 10 and 20 inches. Moderately deep Galway soils are in areas where the underlying limestone bedrock is at a depth between 20 and 40 inches. Well drained Wappinger soils and somewhat poorly drained Linlithgo soils are on flood plains.

Most areas of this unit are used as cultivated cropland, hayland, or pastureland. Some areas are wooded or in residential development. Stripcropping and cross slope tillage help to reduce erosion in farmed areas. Georgia soils and the wetter included soils can be drained with tile.

Slow percolation, moderate frost action, and slope are the main limitations in the areas used for community development.

8. Taconic-Rock Outcrop-Macomber

Dominantly gently sloping to very steep, shallow and moderately deep, somewhat excessively drained and well drained, medium textured soils that formed in glacial till, and rock outcrop; on uplands

This unit consists of soils on bedrock controlled hillsides in the extreme northeastern part of the county. Slopes range from 5 to 80 percent.

These soils make up about 0.5 percent of the county. The unit is about 45 percent Taconic soils, 30 percent rock outcrop, 15 percent Macomber soils, and 10 percent minor soils.

The Taconic soils are somewhat excessively drained and are 10 to 20 inches deep to folded phyllite, schist, or quartz bedrock. They have a channery silt loam surface layer and medium textured subsoil. Taconic soils are on hilltops and hillsides. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 5 to 80 percent.

The rock outcrop consists of folded phyllite, schist, and quartz. Bedrock exposures occur throughout the unit. Very steep or vertical escarpments are on hillsides. Sloping bedrock outcrops are on hilltops.

The Macomber soils are well drained and are 20 to 40 inches deep to folded phyllite, schist, or quartz bedrock. They have a channery silt loam surface layer

and medium textured subsoil. Macomber soils are on hilltops and toeslopes of hills. Permeability is moderate throughout the soil. Slopes range from 5 to 25 percent.

Soils of minor extent include poorly drained and very poorly drained Sun soils in depressions and drainageways. Also included are areas of soils deeper than 40 inches. The deeper soils are in the less sloping areas, usually at the base of steeper slopes. Soils less than 10 inches to bedrock are common, particularly in steep and very steep areas.

Most areas of this unit are wooded and part of the Taconic State Park and are used for recreation purposes. Most other areas of this unit are also wooded, although a small portion is in brushland. These areas are also used for recreation.

Slope and the depth to bedrock are the main limitations if this unit is used for community development.

9. Nassau-Rock Outcrop-Cardigan

Dominantly undulating to very steep, shallow and moderately deep, somewhat excessively drained and well drained, medium textured soils that formed in glacial till, and rock outcrop; on uplands

This unit consists of soils on hills formed in glacial till dominated by shale. The landscape consists of hillsides and hilltops, with very complex topography and steep micro-relief. Bedrock exposures, with very steep to nearly vertical bedrock escarpments, are a prominent part of the landscape. Slope ranges from 1 to 70 percent.

This unit makes up about 11 percent of the county. The unit is about 40 percent Nassau soils, 15 percent rock outcrop, 10 percent Cardigan soils, and 35 percent soils of minor extent (fig. 6).

The Nassau soils are somewhat excessively

Figure 6.—Tree roots are restricted by the shallow depth to shale bedrock on this Nassau soil.

drained and are 10 to 20 inches deep to shale bedrock. They have a channery silt loam surface layer and medium textured subsoil. Nassau soils are on upper slopes and hilltops. Permeability is moderate throughout the soil. Slopes range from 1 to 70 percent.

The rock outcrop consists of folded shale. Bedrock exposures occur throughout the unit.

The Cardigan soils are well drained and 20 to 40 inches deep to shale bedrock. They have a channery silt loam surface layer and medium textured subsoil. Cardigan soils are on lower concave slopes. Permeability is moderate throughout the soil. Slopes range from 1 to 45 percent.

Soils of minor extent are Dutchess, Sun, Palms, Carlisle, Canandaigua, Massena, Georgia, Farmington, Galway, Stockbridge, Hollis, Chatfield, and Charlton. Very deep well drained Dutchess soils are in areas where the underlying bedrock is deeper than 60 inches. Poorly drained and very poorly drained medium textured Sun soils and moderately fine textured Canandaigua soils are in drainageways and depressions. Palms and Carlisle are very poorly drained organic soils and are in concave areas where water is impounded. Palms soils have an organic layer 16 to 51 inches thick and Carlisle soils have an organic layer thicker than 51 inches. Moderately well drained Georgia soils are on concave footslopes and somewhat poorly drained Massena soils are on gently sloping and nearly level areas. Shallow well drained to somewhat excessively drained Farmington soils, moderately deep well drained and moderately well drained Galway soils, and very deep well drained Stockbridge soils are in areas where the underlying bedrock is limestone. Shallow well drained and somewhat excessively drained Hollis soils, moderately deep somewhat excessively drained and well drained Chatfield soils, and very deep well drained Charlton soils are in areas where the underlying bedrock is granite, gneiss, and schist.

Most areas of this unit are wooded or used for community development. A few areas are used for pasture. Depth to bedrock, scattered bedrock outcrops, and slope are the main limitations if this unit is used for agriculture and community development.

10. Hollis-Chatfield-Rock Outcrop

Dominantly undulating to very steep, shallow to moderately deep, well drained and somewhat excessively drained, medium and moderately coarse textured soils, and rock outcrop; on uplands

This unit consists of soils formed in glacial till dominated by granite, gneiss, and schist. The landscape consists of hillsides and hilltops, with very complex topography and steep micro-relief. This unit is in the southeastern part of the county. Bedrock exposures, with very steep to nearly vertical bedrock escarpments, are a prominent part of the landscape. Slope is dominantly 5 to 30 percent, but ranges from 1 to 70 percent.

This unit makes up about 6 percent of the county. The unit is about 40 percent Hollis soils, 20 percent Chatfield soils, 20 percent rock outcrop, and 20 percent soils of minor extent.

The Hollis soils are well drained and somewhat excessively drained and are 10 to 20 inches deep to granite, gneiss or schist bedrock. They have a loam surface layer and medium textured subsoil. Hollis soils are on the sides and tops of hills. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 1 to 70 percent.

The Chatfield soils are somewhat excessively drained and well drained and are 20 to 40 inches deep to granite, gneiss, or schist bedrock. They have a fine sandy loam surface layer, medium textured subsoil, and moderately coarse textured substratum. Chatfield soils are on hillsides and hilltops. Permeability is moderate or moderately rapid throughout the soil. Slopes range from 1 to 70 percent. The rock outcrop consists of folded granite, schist, and gneiss. Bedrock exposures occur throughout the unit.

Soils of minor extent are Charlton, Sun, Massena, Nassau, Cardigan, and Dutchess. Very deep well drained Charlton soils are in areas where the underlying bedrock is deeper than 60 inches. Very deep poorly drained and very poorly drained Sun soils are in depressions and drainageways. Very deep somewhat poorly drained Massena soils are in slight depressions. Shallow somewhat excessively drained Nassau soils, moderately deep well drained Cardigan soils, and very deep well drained Dutchess soils are in areas where the bedrock is shale.

Most areas of this unit are wooded or are used for community development. A few areas are used for pasture. Depth to bedrock, scattered bedrock outcrops, and steep slopes are the main limitations in areas used for agriculture and community development.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading “Use and Management of the Soils.”

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some “included” areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Stockbridge silt loam, 3 to 8 percent slopes is a phase of the Stockbridge series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Nassau-Cardigan Complex, rolling, very rocky is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Kingsbury and Rhinebeck soil is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urbanland is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

BeB—Bernardston silt loam, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping, and well drained soils that formed in glacial till deposits. It is on hilltops and broad till plains. Areas are oval or irregularly shaped. They commonly range from 5 acres to 130 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of the Bernardston soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 27 inches, light olive brown silt loam

Substratum:
27 to 80 inches, olive brown silt loam, firm and dense

Included with this map unit in mapping are areas of moderately well drained Pittstown soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Pittstown and Punsit soils are in slightly lower concave areas. Sun and Canandaigua soils are in depressions and along drainageways. Stockbridge soils are included where the substratum is less acid and less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 25 percent of the unit.

Important soil properties—

Parent Material: glacial till
*Permeability:*moderate in the surface layer and subsoil, and slow in the dense substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by the firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is well suited to cultivated crops. Erosion is a hazard, particularly on areas left bare of plant cover. The seasonal high water table can slightly delay spring tillage and planting. Subsurface draining of wetter inclusions and diverting surface runoff from higher areas will reduce wetness. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation is the main limitation if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill above the impermeable substratum usually will allow onsite sewage disposal in many places.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials,

installing a drainage system, and providing a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this map unit is used for camping, picnic areas, playgrounds, and trails. Small stones are also a limitation for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Adding sandy fill, subsurface drainage, and diverting runoff from higher areas will cover the small stones and reduce wetness. Grading will reduce the slope limitation.

The capability subclass is IIe.

BeC—Bernardston silt loam, 8 to 15 percent slopes

This map unit consists of very deep, strongly sloping and well drained Bernardston soils that formed in glacial till deposits. It is on hills and side slopes. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 275 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Bernardston soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 27 inches, light olive brown silt loam

Substratum:
27 to 80 inches, olive brown silt loam, firm and dense

Included with this map unit in mapping are a few small areas of moderately well drained Pittstown soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Pittstown and Punsit soils are in slightly lower concave areas. Sun and Canandaigua soils are in depressions and along drainageways. Included Stockbridge soils are less acid and less dense in the substratum. Also included are areas that have a higher clay content in the subsoil. Small areas of a similar soil are included in the extreme northeastern part of the county that have a mean annual soil temperature less than 47 degrees Fahrenheit and have a shorter growing season. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil and slow in the dense substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by the firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. The seasonal high water table can slightly delay spring tillage and planting. Subsurface draining of wetter inclusions and diverting surface runoff from higher areas will reduce wetness. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during pasture establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Logging roads laid out across the slope reduce the risk of erosion.

The seasonal high water table and slope are the main limitations if this map unit is used as a site for dwellings with basements. Erosion is a moderate hazard during construction. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation is the main limitation if this map unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill above the impermeable

substratum will allow onsite sewage disposal in many places.

The seasonal high water table, slope, and frost action are the main limitations if this map unit is used for local roads and streets. Constructing on raised fill materials, installing a drainage system, providing a coarse grained subgrade to frost depth, and constructing roads on the contour will reduce these limitations.

The seasonal high water table is the main limitation if this map unit is used for camping and picnic areas, playgrounds, and trails. Slope and small stones are also limitations for camping and picnic areas and playgrounds. Grading, adding sandy fill, and diverting runoff from higher areas will reduce the limitations. Water bars also will reduce wetness on trails.

The capability subclass is IIIe.

BeD—Bernardston silt loam, 15 to 25 percent slopes

This map unit consists of very deep, moderately steep, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Bernardston soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 27 inches, light olive brown silt loam

Substratum:
27 to 80 inches, olive brown silt loam, firm and dense

Included in mapping are areas of moderately well drained Pittstown soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Pittstown soils are at the lower margins of gentle slopes. Punsit soils are in slightly lower concave areas. Sun and Canandaigua soils are in depressions and along drainageways. Stockbridge soils are included where the substratum is less acid and less dense. Also included are soils that have higher clay content in the subsoil. Small areas of a similar soil are included in the extreme northeastern part of the county that have a mean annual soil temperature less than 47 degrees Fahrenheit, and have a shorter growing season. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface and subsoil and slow in the dense substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by the firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland or pasture. Other areas are used for cropland or residential development.

This map unit is poorly suited to cultivated crops. Erosion is a severe hazard, particularly on areas left bare of plant cover. Slope limits the safe operation of equipment. The seasonal high water table can slightly delay spring tillage and planting. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is moderately suited to pasture. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and maintaining proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Windthrow hazard is slight, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. The seasonal high water table is also a limitation. Erosion is a severe hazard during construction. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant

cover help to control erosion and sedimentation during construction. A more suitable site on a less sloping inclusion or nearby soil should be considered.

Slow percolation and slope are the main limitations if this map unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill above the impermeable substratum may allow onsite sewage disposal. Placing distribution lines on the contour increases the efficiency of the system. A more suitable site should be considered in a less sloping, less dense inclusion or nearby soil.

Slope is the main limitation if this map unit is used as a site for local roads and streets. The seasonal high water table and frost action are also limitations. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Constructing on raised fill materials, installing a drainage system, and providing a coarse grained subgrade to frost depth will reduce wetness and frost action.

Slope and the seasonal high water table are the main limitations if this map unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce these limitations.

The capability subclass is IVe.

BeE—Bernardston silt loam, 25 to 45 percent slopes

This map unit consists of very deep, steep, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 80 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Bernardston soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 27 inches, light olive brown silt loam

Substratum:
27 to 80 inches, olive brown silt loam, firm and dense

Included in mapping are a few small areas of somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Punsit soils are in slightly lower and concave areas. Sun and Canandaigua soils are in depressions and along drainageways. Stockbridge soils are included where the substratum is less acid and less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 10 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil and slow in the dense substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by the firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used as woodland. This map unit is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Windthrow hazard is slight, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. The seasonal high water table is also a limitation. Erosion is a very severe hazard during construction. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Slow percolation and steep slope are the main limitations if this map unit is used for septic tank absorption fields. A more suitable site should be selected in a less sloping inclusion or nearby soil with more rapid percolation.

Steep slope is the main limitation if this map unit is used for local roads and streets. The seasonal high water table and frost action are also limitations. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Construction on raised fill materials, installing a drainage system, and providing a coarse grained subgrade to frost depth will reduce the wetness and frost action limitations.

Steep slope is the main limitation if this map unit is used for trails. The seasonal high water table is also a

limitation. Constructing trails with switchbacks, log steps, and water bars will reduce these limitations.

The capability subclass is VIIe.

BgB—Bernardston-Urban land complex, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping, well drained Bernardston soils that formed in glacial till deposits and urban land. It is on hilltops and broad till plains. Areas are oval, rectangular, or irregularly shaped. This unit consists of about 40 percent Bernardston soils, 35 percent urban land, and 25 percent other soils. The Bernardston soils and urban land are in such an intricate pattern that they were not mapped separately. They commonly range from 5 to 150 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Bernardston soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 27 inches, light olive brown silt loam

Substratum:
27 to 80 inches, olive brown silt loam, firm and dense

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Pittstown soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Pittstown soils are at the lower margins of slopes. Punsit soils are in slightly lower and concave areas. Sun and Canandaigua soils are in depressions and along drainageways. Udorthents are included adjacent to buildings and other structures. Also included are soils that are steeper and soils that have a higher clay content in the subsoil. Inclusions make up about 25 percent of the unit.

Important soil properties of the Bernardston soil—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil and slow in the dense substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by the firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas between structures are used as lawns, gardens, woodland, or brushland.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage with interceptor drains to divert water away from the building, footing or foundation drains backfilled with gravel, and waterproofing the outside of basement walls will reduce the risk of water damage to basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover will help to control erosion and sedimentation during construction.

Slow percolation is the main limitation if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill above the impermeable substratum usually will allow onsite sewage disposal in many places.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarse grained subgrade to frost depth will help reduce these limitations.

The seasonal high water table is the main limitation for camping and picnic areas, playgrounds, and trails. Small stones are also a limitation for camping and picnic areas and playgrounds. Adding sandy fill will cover the small stones and reduce wetness for camping and picnic areas and playgrounds. Water bars will reduce wetness on trails.

A capability subclass is not assigned for this unit.

Ca—Canandaigua silt loam, neutral substratum

This map unit consists of very deep, nearly level, and poorly drained and very poorly drained soils that formed in lacustrine deposits. It is in depressions and along drainageways in the western part of the county. Areas are elongated, oval, or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Canandaigua soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 21 inches, dark gray silt loam with mottles
21 to 31 inches, grayish brown silt loam with mottles
31 to 40 inches, gray silty clay loam with mottles

Substratum:
40 to 72 inches, gray silt loam and silty clay loam with mottles

Included in mapping are areas of somewhat poorly drained Kingsbury soils and Punsit soils on slightly higher areas. Also included are areas of somewhat poorly drained Raynham soils on slightly higher areas with coarser texture. Sun soils are included in areas with loamier textures and more rock fragments. Very poorly drained Livingston soils are included where the soil has a higher clay content. Included areas make up about 20 percent of the unit.

Important soil properties—

Parent Material: lacustrine deposits
Permeability: moderately slow in the surface layer, subsoil and substratum
Available Water Capacity: high
Soil Reaction: moderately acid to neutral in the surface and upper subsoil, neutral in the lower subsoil and substratum
Surface Runoff: very slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: +1.0 to 1.0 foot(Nov-May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland or water tolerant bushes or grasses.

This map unit is unsuited to cultivated crops and pasture because of the prolonged seasonal high water table and ponding.

The potential productivity of this map unit for red maple is moderate. Seedling mortality is high because of the seasonal high water table. Windthrow hazard is severe because the high water table restricts root growth. Wetness severely limits operation of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Slow percolation is also a limitation for septic tank absorption fields. Frost action is also a limitation for local roads and streets. A more suitable site on a drier, coarser textured soil should be selected for all of these uses.

This map unit has fair potential for wetland wildlife habitat.

The capability subclass is IVw.

Cc—Carlisle muck

This map unit consists of very deep, nearly level, and very poorly drained soils that formed in organic deposits. It is in bogs on outwash plains, till plains, and flood plains. Areas are broad or irregularly shaped. They commonly range from 5 to 700 acres. Slopes are smooth and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of the Carlisle soils are as follows—

Surface layer:
Surface to 12 inches, black muck

Subsurface layer:
12 to 80 inches, black muck

Included in mapping are areas of Palms soils, poorly drained and very poorly drained Canandaigua soils, and poorly drained and very poorly drained Wayland soils, commonly around the perimeter of the unit. The organic layer in Palms soils is between 16 and 51 inches thick. Canandaigua soils are silty throughout. Wayland soils are on flood plains and are also silty throughout. Areas of Fluvaquents and Udifluvents are included in areas where fast flowing streams enter the unit. Inclusions make up about 20 percent of this unit.

Important soil properties—

Parent Material: organic matter
Permeability: moderately slow to moderately rapid
Available Water Capacity: high
Soil Reaction: very strongly acid to mildly alkaline
Surface Runoff: very slow or ponded
Erosion Hazard: slight
Depth to Seasonal High Water Table: +0.5 to 1 foot (Sept-June)
Rooting Zone: restricted by the high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: frequent (on flood plains)

Most areas of this map unit are used for woodland or water tolerant bushes or grasses.

This map unit is unsuited to cropland or pasture because of the prolonged seasonal high water table and frequent ponding.

The potential productivity for red maple is moderate. Wetness severely limits the operation of equipment. Seedling mortality is high because of the prolonged seasonal high water table and ponding. Windthrow hazard is severe because the high water table restricts root growth.

Ponding and subsidence are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Low strength is also a limitation for dwellings with basements. Slow percolation is also a limitation for septic tank absorption fields. Frost action is also a limitation for local roads and streets. A more suitable site on a drier soil should be selected for all of these uses.

This map unit has good potential for wetland wildlife habitat (fig. 7).

The capability subclass is Vw.

ChB—Charlton loam, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping and well drained soils that formed in glacial till deposits. It is on hilltops and broad till plains. Areas are oval or irregularly shaped. They commonly range from 5 to 175 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Figure 7.—Wetland vegetation is common in areas of very poorly drained Carlisle Muck.

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of Charlton soils where stones cover 0.1 to 3 percent of the surface and are 3 to 25 feet apart. Included Stockbridge soils are firmer in the substratum. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils, and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid or moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce erosion. Tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture and hay. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Planting early in the spring helps reduce the impact of summer droughtiness and reduces seedling mortality.

This map unit does not have limitations for dwellings with basements, septic tank absorption fields, or local roads and streets. During construction, minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

This map unit has few limitations for camping and picnic areas or trails. Slope and small stones are the main limitations for playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is IIe.

ChC—Charlton loam, 8 to 15 percent slopes

This map unit consists of very deep, strongly sloping, and well drained soils that formed on glacial till deposits. It is on hills and side slopes. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Areas of Stockbridge soils are included where the substratum is firmer. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: moderate

Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and maintaining proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Slope is the main limitation for dwellings with basements. Erosion is a moderate hazard during construction. Designing dwellings to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slope is the main limitation for septic tank absorption fields. Placing distribution lines on the contour increases the efficiency of the system.

Slope is the main limitation for local roads and streets. Constructing roads on the contour will reduce the slope limitation.

This map unit has few limitations for trails. Slope is the main limitation for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Grading will help reduce the slope limitation and adding sandy fill will cover the small stones.

The capability subclass is IIIe.

ChD—Charlton loam, 15 to 25 percent slopes

This map unit consists of very deep, moderately steep, and well drained soils that formed on glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 350 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included in mapping are areas of moderately well drained Georgia soils and poorly drained and very poorly drained Sun soils. Georgia soils are in slightly lower and concave areas and Sun soils are in depressions and along drainageways. Areas of Stockbridge soils are included where the substratum is firmer. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils, and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 10 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for pastureland or woodland. Other areas are used for cropland or residential development.

This map unit is poorly suited to cultivated crops. Erosion is a severe hazard, particularly on areas left bare of plant cover. Slope limits the safe operation of equipment. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is moderately suited to pasture. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing

is a major concern of pasture management as it accelerates erosion and causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages the vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars laid out across slopes, reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slope is the main limitation if this unit is used for septic tank absorption fields. Placing distribution lines on the contour increases the efficiency of the system. A more suitable sight should be considered in a less sloping inclusion or nearby soil.

Slope is also the main limitation for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will help reduce the slope limitation.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is IVe.

ChE—Charlton loam, 25 to 45 percent slopes

This map unit consists of very deep, steep, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 90 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included with this map unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Areas of Stockbridge soils are included where the substratum is firmer. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils, and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 10 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland.

This map unit is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity of this map unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope is the main limitation if this unit is used for septic tank absorption fields, or dwellings with basements. The erosion hazard is very severe during construction. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Steep slope is the main limitation if this unit is used for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation.

Steep slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIe.

ClC—Charlton loam, 8 to 15 percent slopes, very stony

This map unit consists of very deep, strongly sloping, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Stones cover 0.1 to 3 percent of the surface and are 3 to 25 feet apart. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for pasture or woodland. Other areas are used for residential development.

This map unit is unsuited to cultivated crops because of surface stoniness. Where the stones are cleared, this map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is poorly suited to pasture because of surface stoniness. Where the stones are cleared, this map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion. Surface stoniness somewhat restricts equipment operation.

Slope is the main limitation if this unit is used as a site for dwellings with basements. Erosion is a moderate hazard during construction. Designing dwellings to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slope is the main limitation if this unit is used as a site for septic tank absorption fields. Placing distribution lines on the contour increases the efficiency of the system.

Slope is the main limitation for local roads and streets. Constructing roads on the contour will reduce the slope limitation.

This map unit has few limitations for trails. Slope and large stones are the main limitations for camping and picnic areas and playgrounds. Clearing the stones and grading will reduce these limitations.

The capability subclass is VIs.

ClD—Charlton loam, 15 to 25 percent slopes, very stony

This map unit consists of very deep, moderately steep, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Stones cover 0.1 to 3 percent of the surface and are 3 to 25 feet apart. Areas are elongated or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils, and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland. Other areas are used for pastureland or residential development.

This map unit is unsuited to cultivated crops because of surface stoniness. Where the stones are cleared, this map unit is still poorly suited to cultivated crops because of slope. Erosion is a severe hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is poorly suited to pasture because of surface stoniness. Where the stones are cleared, this map unit is moderately suited to pasture. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage.

The potential productivity of this map unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages the vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes and surface stoniness limit the safe operation of equipment.

Slope is the main limitation if this unit is used as a site for dwellings with basements. Erosion is a severe hazard during construction. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slope is the main limitation for septic tank absorption fields. Placing distribution lines on the contour increases the efficiency of the system. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Slope is the main limitation for local roads and streets. Constructing roads on the contour or locating them in less sloping inclusions will reduce the slope limitation.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIs.

ClE—Charlton loam, 25 to 45 percent slopes, very stony

This map unit consists of very deep, steep, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Stones cover 0.1 to 3 percent of the surface and are 3 to 25 feet apart. Areas are elongated or irregularly shaped. They commonly range from 5 to 60 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

Included with this map unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of moderately deep well drained and somewhat excessively drained Chatfield soils and shallow well drained and somewhat excessively drained Hollis soils where the underlying schist, granite, or gneiss bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland.

This map unit is unsuited to cultivated crops and pasture because of steep slope and surface stoniness. Erosion is a very severe hazard.

The potential productivity of this map unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope is the main limitation if this unit is used for dwellings with basements, or septic tank absorption fields. The erosion hazard is very severe during construction. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Steep slope is the main limitation if this unit is used as a site for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation.

Steep slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

CrB—Charlton-Chatfield complex, undulating, rocky

This map unit consists of very deep, well drained Charlton soils and moderately deep, well drained and somewhat excessively drained Chatfield soils that formed in glacial till deposits. It is on hilltops and undulating till plains that are underlain by folded schist, granite, or gneiss bedrock. Charlton soils are commonly on lower concave slopes and Chatfield soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 50 percent Charlton soils, 30 percent Chatfield soils, and 20 percent other soils, and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Charlton and Chatfield soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of the Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of well drained and somewhat excessively drained Hollis soils where the underlying bedrock is between 10 and 20 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Charlton soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for cropland or pastureland. Other areas are in woodland or residential development.

This unit is suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is suited to pasture. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock in areas of Chatfield soils and rock outcroppings over portions of the unit are the main limitations if this unit is used as a site for septic tank absorption fields or for dwellings with basements. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements or septic tank absorption fields should be constructed in areas of very deep Charlton soils. During construction, minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Frost action and depth to bedrock in areas of Chatfield soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for local roads and streets. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Uneven slopes and rock outcroppings over portions of the unit are limitations for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations.

The capability subclass is IIs.

CrC—Charlton-Chatfield complex, rolling, rocky

This unit consists of very deep, well drained Charlton soils and moderately deep, well drained and somewhat excessively drained Chatfield soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Charlton soils are commonly on lower concave slopes and Chatfield soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 50 percent Charlton soils, 30 percent Chatfield soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Charlton and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 250 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of well drained and somewhat excessively drained Hollis soils where the underlying bedrock is between 10 and 20 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Charlton soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for cropland or pastureland. Other areas are used for woodland or residential development.

This unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth and maintain productivity over an extended period of time.

This unit is suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Depth to bedrock in areas of Chatfield soils and rock outcroppings over portions of the unit are the main limitations if this unit is used as a site for septic tank absorption fields or for dwellings with basements. Slope is also a limitation. Erosion is a moderate hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Septic tank absorption fields and dwellings with basements should be constructed in areas of very deep Charlton soils. Minimizing the removal of vegetation, mulching and quickly establishing plant cover help to control erosion and sedimentation.

Slope, frost action, and the variable depth to bedrock are the main limitations if this unit is used as a site for local roads and streets. Constructing roads on the contour will reduce the slope limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Rolling uneven slopes and rock outcroppings over portions of the unit are limitations for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Carefully selecting a site, grading, and adding sandy fill will reduce these limitations.

The capability subclass is IIIe.

CrD—Charlton-Chatfield complex, hilly, rocky

This unit consists of very deep, well drained Charlton soils and moderately deep, well drained and somewhat excessively drained Chatfield soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Charlton soils are commonly on lower

concave slopes and Chatfield soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 40 percent Charlton soils, 40 percent Chatfield soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Charlton and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of well drained and somewhat excessively drained Hollis soils where the underlying bedrock is between 10 and 20 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Charlton soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of slope. Pasture is a better use, but the suitability is poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking help to increase the quantity and quality of feed and forage and maintains pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock in areas of Chatfield soils, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used for dwellings with basements. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Charlton soils. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Depth to bedrock rock in areas of Chatfield soils, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used as a site for septic tank absorption fields. Uneven slopes and

variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be constructed in areas of very deep Charlton soils. Placing distribution lines on the contour increases the efficiency of the system. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Slope is the main limitation for local roads and streets. Frost action and the variable depth to bedrock are also limitations. Constructing roads on the contour will reduce the slope limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

CrE—Charlton-Chatfield complex, steep, rocky

This unit consists of very deep, well drained Charlton soils and moderately deep, well drained and somewhat excessively drained Chatfield soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Charlton soils are commonly on lower concave slopes and Chatfield soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 40 percent Charlton soils, 40 percent Chatfield soils and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Charlton and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 950 acres. Slopes are complex and range from 25 to 45 percent.

The typical sequence, depth, and composition of the layers of Charlton soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown loam

Subsoil:
8 to 12 inches, dark yellowish brown gravelly loam
12 to 26 inches, olive brown gravelly loam
26 to 30 inches, light olive brown gravelly loam

Substratum:
30 to 39 inches, dark grayish brown gravelly loam
39 to 72 inches, olive gravelly loam

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of well drained and somewhat excessively drained Hollis soils where the underlying bedrock is between 10 and 20 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Charlton soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity of this unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Steep

slopes severely limit the safe operation of equipment. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock rock in areas of Chatfield soils, rock outcroppings over portions of the unit, and steep slope are the main limitations if this unit is used for septic tank absorption fields, or dwellings with basements. Uneven slopes and variable depth to bedrock reduce site selection. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Steep slope is the main limitation if this unit is used as a site for local roads and streets. Frost action and the variable depth to bedrock are also limitations. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Careful planning of grades and street locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

Steep slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the erosion and slope limitation.

The capability subclass is VIIe.

CtB—Chatfield-Hollis complex, undulating, very rocky

This unit consists of moderately deep, well drained and somewhat excessively drained Chatfield soils, and shallow, well drained and somewhat excessively drained Hollis soils that formed in glacial till deposits. It is on hilltops, narrow ridges, and undulating till plains that are underlain by folded schist, granite, or gneiss bedrock. Chatfield soils are commonly on lower concave slopes and Hollis soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 40 percent Chatfield soils, 30 percent Hollis soils, and 30 percent rock outcrop and other soils. Rock outcrop covers 2 to 10 percent of the surface. The Chatfield and Hollis soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas of this unit are oval or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface layer:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown loam

Bedrock:
15 inches, folded micaceous schist

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Chatfield soil—

*Parent Material:*glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Hollis soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most of areas of this unit are used for pasture or woodland. Other areas are in residential development.

This unit is unsuited to cultivated crops because of

the depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is poor. Erosion may be a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate in areas of Hollis soils because of droughtiness, and windthrow hazard is severe because of shallow depth to bedrock. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used as a site for dwellings with basements. Erosion is a moderate hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations for septic tank absorption fields. The short uneven slopes are also a limitation. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Shallow depth to bedrock in areas of Hollis soils and rock outcroppings over portions of the unit are the main limitations for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Shallow depth to bedrock in areas of Hollis soils and rock outcroppings over portions of the unit are the main limitations for camping and picnic areas and playgrounds. Adding fill will reduce this limitation.

The capability subclass is VIs.

CtC—Chatfield-Hollis complex, rolling, very rocky

This unit consists of moderately deep, well drained and somewhat excessively drained Chatfield soils, and shallow, well drained and somewhat excessively drained Hollis soils that formed in glacial till deposits. This unit is on hilltops, narrow ridges, and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Chatfield soils are commonly on lower concave slopes and Hollis soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 40 percent Chatfield soils, 40 percent Hollis soils, and 20 percent rock outcrop and other soils. Rock outcrop covers 2 to 10 percent of the surface. The Chatfield and Hollis soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas of this unit are oval or irregularly shaped. They commonly range from 5 to 400 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface layer:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown loam

Bedrock:
15 inches, folded micaceous schist

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Hollis soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for pasture or woodland. Other areas are used for residential development.

This unit is unsuited to cultivated crops because of the depth to bedrock and the rock outcrop over portions of the unit. Pasture is a better use, but the suitability is rated poor. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate in areas of Hollis soils because of droughtiness and windthrow hazard is severe because of the shallow depth to bedrock. Logging trails laid out across slopes reduce the risk of erosion. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching and quickly establishing plant cover during construction will help control erosion and sedimentation.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter the effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Shallow depth to bedrock in areas of Hollis soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for local roads and streets. Slope and frost action are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Shallow depth to bedrock in areas of Hollis soils and rock outcrop over portions of the unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Adding fill will reduce these limitations.

The capability subclass is VIs.

CtD—Chatfield-Hollis complex, hilly, very rocky

This unit consists of moderately deep, well drained and somewhat excessively drained Chatfield soils and shallow, well drained and somewhat excessively drained Hollis soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Chatfield soils are commonly on lower concave slopes and Hollis soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 40 percent Chatfield soils, 40 percent Hollis soils, and 20 percent rock outcrop and other soils. Rock outcrop covers 2 to 10 percent of the surface. The Chatfield and Hollis soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas of this unit are elongated or irregularly shaped. They commonly range from 5 to 1100 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface layer:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown loam

Bedrock:
15 inches, folded micaceous schist

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Hollis soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most of areas of this unit are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of the depth to bedrock, rock outcroppings over portions of the unit, and slope. Pasture is a better use, but the suitability is only poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages the vegetative cover. Seedling mortality is moderate in areas of Hollis soils because of droughtiness and windthrow hazard is severe because of the shallow depth to bedrock. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation. A more suitable site should be considered on a deeper, less sloping inclusion or nearby soil.

Depth to bedrock, rock outcroppings over portions of the unit, and slope are the main limitation if this unit is used for septic tank absorption fields. The short uneven slopes are also a limitation. A pollution hazard exists because the soil is not thick enough to filter the effluent. A more suitable site should be found in a deeper, less sloping inclusion or nearby soil.

Shallow depth to bedrock in areas of Hollis soils, rock outcroppings over portions of the unit, and slope are the main limitations for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIs.

CuA—Copake gravelly silt loam, nearly level

This map unit consists of very deep, and well drained soils that formed in glaciofluvial deposits high

in limestone fragments. It is on valley floors and outwash plains. Areas are irregularly shaped. They commonly range from 5 to 150 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Included in mapping are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Also included are areas of somewhat excessively drained acid Hoosic soils. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated cropland. Other areas are used for pastureland, woodland, residential development, or mined for sand and gravel.

This map unit is very well suited to cultivated crops. Lack of moisture during dry periods is a limitation and the use of irrigation increases productivity. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in some places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for trails. Small stones are the main limitation if this unit is used for camping and picnic areas and playgrounds. Adding sandy fill will cover the small stones.

The capability class is I.

CuB—Copake gravelly silt loam, undulating

This map unit consists of very deep and well drained soils that formed in glaciofluvial deposits high in limestone fragments. It is on valley floors and undulating outwash plains. Areas are oval or irregularly shaped. They commonly range from 5 to 175 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Included in mapping are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions. Also included are areas of somewhat excessively drained acid Hoosic soils. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated cropland. Other areas are used for pasture, woodland, residential development, or mined for sand and gravel (fig. 8).

This map unit is well suited to cultivated crops. Erosion may be a hazard, particularly on long slopes or on areas left bare of plant cover. Lack of moisture during dry periods is a limitation and the use of irrigation increases productivity. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Erosion is a hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used as a site for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for trails. Small stones are the main limitations for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is IIe.

CuC—Copake gravelly silt loam, rolling

This map unit consists of very deep, well drained soils that formed in glaciofluvial deposits high in limestone fragments. It is on valley sides and small hills. Areas are elongated or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Included with this map unit in mapping are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions. Also included are areas of somewhat excessively drained acid Hoosic soils. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash

Figure 8.—Copake gravelly silt loam, undulating, is prime farmland (foreground). Taconic-Rock Outcrop-Macomber Association is in the background.

Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated crops or pasture. Other areas are used for woodland, residential development, or mined for gravel.

This map unit is moderately well suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. The lack of moisture during dry periods is a limitation and the use of irrigation increases productivity. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution from absorption fields because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in some places.

Slope and frost action are the main limitations if this unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade reduces frost action.

This map unit has few limitations for trails. Slope and small stones are the main limitations for camping and picnic areas and playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is IIIe.

CuD—Copake gravelly silt loam, hilly

This map unit consists of very deep, well drained soils that formed in glaciofluvial deposits high in limestone fragments. It is on valley sides, terrace faces, and hills. Areas are elongated or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Included in mapping are areas of somewhat poorly drained Fredon soils in depressions. Also included are areas of somewhat excessively drained acid Hoosic soils. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for pastureland or woodland. Other areas are used for residential development or mined for sand and gravel.

This map unit is unsuited to cultivated crops because of slope. Pasture is a better use, but suitability is only poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture suitability.

The potential productivity for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Droughtiness can make the establishment and maintenance of lawns difficult. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slope and poor filtering are the main limitations if this unit is used for the installation of septic tank absorption fields. There is a hazard of groundwater pollution from absorption fields because the rapidly

permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places. A more suitable site should be considered in a less sloping, less sandy and gravelly inclusion, or nearby soil.

Slope is the main limitation if this unit is used for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

CuE—Copake gravelly silt loam, 25 to 45 percent slopes

This map unit consists of very deep, steep, and well drained soils that formed in glaciofluvial deposits high in limestone fragments. It is on valley sides and terrace faces. Areas are elongated or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Included mapping are small areas of poorly drained and very poorly drained Halsey soils along drainageways. Also included are areas of somewhat excessively drained, acid, Hoosic soils. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for woodland. Some areas are mined for sand and gravel.

This map unit is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard, particularly on areas left bare of plant cover during establishment.

The potential productivity for northern red oak is moderate. Erosion is a severe hazard. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes limit the safe operation of equipment.

Steep slope is the main limitation if this map unit is used for dwellings with basements. Erosion is a very severe hazard during construction. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Steep slope and poor filtering are the main limitations if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution from absorption fields because the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a less sloping, less sandy, and gravelly inclusion or nearby soil.

Steep slope is the main limitation if this map unit is used for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIe.

CwA—Copake channery silt loam, fan, 0 to 3 percent slopes

This map unit consists of very deep, nearly level and well drained soils that formed in glacial outwash

deposits. It is on outwash fans near streams. Areas are elongated or fan shaped and in some places traversed by tributary streams. They commonly range from 5 to 150 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown channery silt loam

Subsoil:
6 to 8 inches, dark yellowish brown channery loam
8 to 24 inches, olive brown and yellowish brown channery loam
24 to 36 inches, light olive brown and yellowish brown channery loam

Substratum:
36 to 80 inches, light olive brown very channery loamy coarse sand

Included in mapping are small areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Also included are areas of somewhat excessively drained, acid Hoosic soils. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash with alluvium
Permeability: moderate or moderately rapid in surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 3 to 6 feet (Apr-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare, brief

This map unit meets the criteria for prime farmland. Most areas are used for cultivated cropland. Other areas are used for pastureland, woodland, or residential development.

This map unit is very well suited to cultivated crops. Lack of moisture during dry periods is a limitation, and the use of irrigation increases productivity. In some years, brief flooding damages crops and new seedlings. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce any soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted during dry periods or brief periods of flooding, and proper stocking help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

Rare flooding is the main limitation if this map unit is used for dwellings with basements. The seasonal high water table is also a limitation. Droughtiness can make the establishment and maintenance of lawns difficult. Building dwellings on higher areas of this map unit with raised foundations and diversions will reduce the flooding and wetness limitations. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering, the seasonal high water table, and rare flooding are the main limitations if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table. Also, the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less sandy and gravelly inclusion or nearby soil.

Frost action and rare flooding are the main limitations if this map unit is used for local roads and streets. Providing a coarse grained subgrade to frost depth will reduce frost action. Constructing roads on raised fill will reduce the flooding limitation.

This map unit has few limitations for trails. Rare flooding is the main limitation for camping areas. Small stones are the main limitation if this map unit is used for picnic areas and playgrounds. Adding sandy fill will cover small stones.

The capability subclass is I.

CwB—Copake channery silt loam, fan, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping and well drained soils that formed in glacial outwash deposits. It is on outwash fans near streams. Areas are elongated or fan shaped and usually traversed by a tributary stream. They commonly range from 5 to 100 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown channery silt loam

Subsoil:
6 to 8 inches, dark yellowish brown channery loam
8 to 24 inches, olive brown and yellowish brown channery loam
24 to 36 inches, light olive brown and yellowish brown channery loam

Substratum:
36 to 80 inches, light olive brown very channery loamy coarse sand

Included with this map unit in mapping are small areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas, and Halsey soils are in depressions and along drainageways. Also included are areas of somewhat excessively drained, acid Hoosic soils. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash with alluvium
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 3 to 6 feet (Apr-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare, brief

This map unit meets the criteria for prime farmland. Most areas are used for cultivated cropland. Other areas are used for pastureland, woodland, or residential development.

This map unit is well suited to cultivated crops. Erosion may be a hazard, particularly on long slopes or on areas left bare of plant cover. Lack of moisture during dry periods is a limitation, and the use of irrigation increases productivity. In some years brief flooding damages crops and new seedlings. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at the proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Erosion is a hazard, particularly on long slopes or on areas left bare of plant cover. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods or brief periods of flooding, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

Rare flooding is the main limitation if this map unit is used for dwellings with basements. The seasonal high water table is also a limitation. Droughtiness can make the establishment and maintenance of lawns difficult. Building dwellings on higher areas of this map unit with raised foundations and diversions will reduce the flooding and wetness limitations. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering, the seasonal high water table, and rare flooding are the main limitations if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table and the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less sandy and gravelly inclusion or nearby soil.

Frost action and rare flooding are the main limitations for local roads and streets. Providing a coarse grained subgrade to frost depth will reduce frost action. Constructing roads on raised fill will reduce the flooding limitation.

This map unit has few limitations for trails. Rare flooding is the main limitation for camping areas. Small stones are the main limitation for picnic areas and playgrounds. Adding sandy fill will cover small stones.

The capability subclass is IIe.

CxB—Copake-Urban land complex, undulating

This unit consists of very deep, well drained Copake soils that formed in glacial outwash deposits and urban land. It is on valley floors and undulating outwash plains. This unit consists of about 40 percent Copake soils, 35 percent urban land, and 25 percent other soils. The Copake soils and urban land are in such an intricate pattern that they were not mapped separately. Areas are irregularly shaped or rectangular. They commonly range from 5 to 100 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Copake soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly silt loam

Subsoil:
6 to 8 inches, dark yellowish brown gravelly loam
8 to 24 inches, olive brown and yellowish brown gravelly loam
24 to 36 inches, light olive brown and yellowish brown gravelly loam

Substratum:
36 to 80 inches, light olive brown very gravelly loamy coarse sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Areas of somewhat excessively drained, acid Hoosic soils are included. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of the unit.

Important Soil Properties of the Copake soil—

Parent Material: glacial outwash
Permeability: moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to neutral in the surface layer and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are in lawns, gardens, and woodland or brush land between structures.

This unit has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution from absorption fields because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade reduces frost action.

This unit has few limitations for trails. Small stones are the main limitation for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Grading and adding sandy fill will reduce these limitations.

A capability subclass is not assigned for this unit.

DuB—Dutchess silt loam, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping, and well drained soils formed in glacial till deposits. It is on hilltops and broad till plains. Areas are oval or irregularly shaped. They commonly range from 5 to 275 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

Included with this map unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of moderately deep Cardigan soils and shallow somewhat excessively drained Nassau soils where the underlying shale bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate

Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in the solum, strongly acid to slightly acid in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations if used as a site for dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slow percolation is the main limitation if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade and removing stones will reduce these limitations.

This map unit has few limitations for camping and picnic areas or trails. Slope is the main limitation if this unit is used for playgrounds. Grading will reduce the slope limitation.

The capability subclass is IIe.

DuC—Dutchess silt loam, 8 to 15 percent slopes

This map unit consists of very deep, sloping, and well drained soils that formed in glacial till deposits. It is on hills and side slopes. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of moderately deep Cardigan soils and shallow somewhat excessively drained Nassau soils where the underlying shale bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in the solum, strongly acid to slightly acid in the substratum
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a

major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across the slope reduce the risk of erosion.

Slope is the main limitation if this map unit is used for dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slope and slow percolation are the main limitations if this map unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Slope and frost action are the main limitations if this map unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for trails. Slope is the main limitation for camping and picnic areas and playground. Grading will reduce the slope limitation.

The capability subclass is IIIe.

DuD—Dutchess silt loam, 15 to 25 percent slopes

This map unit consists of very deep, moderately steep, and well drained soils that formed in glacial till deposits and is on hills and sideslopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

Included in mapping are areas of moderately well drained Georgia soils and poorly drained and very poorly drained Sun soils. Georgia soils are in slightly lower and concave areas, and Sun soils are in depressions and along drainageways. Also included are areas of moderately deep Cardigan soils and shallow somewhat excessively drained Nassau soils where the underlying shale bedrock is shallower than 40 inches. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in solum, strongly acid to slightly acid in substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for pasture or woodland. Other areas are used for cropland or residential development.

This map unit is poorly suited to cultivated crops. Erosion is a severe hazard, particularly on areas left bare of plant cover. Slope limits the safe operation of equipment. Stripcropping, cross slope tillage, crop rotations, and tillage at proper moisture content will reduce soil erosion, improve soil tilth,and maintain soil productivity over an extended period of time.

This map unit is moderately suited to pasture. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this map unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages the vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduces the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this map unit is used as a site for dwellings with basements. Erosion is a severe hazard during construction. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slope is the main limitation if this unit is used as a

site for septic tank absorption fields. Slow percolation is also a limitation. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in places. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Slope is the main limitation if this map unit is used as a site for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will help overcome the slope limitation. Providing a coarse grained subgrade will reduce the frost action limitation.

Slope is a moderate limitation for trails. Constructing trails with switchbacks, log steps, and waterbars will reduce the slope limitation.

The capability subclass is IVe.

DwB—Dutchess-Cardigan complex, undulating, rocky

This unit consists of very deep, well drained Dutchess soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hilltops and undulating till plains that are underlain by folded shale bedrock. Dutchess soils are commonly on lower concave slopes and Cardigan soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 40 percent Dutchess soils, 30 percent Cardigan soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Dutchess and Cardigan soils are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 3600 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

The typical sequence, depth and composition of the layers of Cardigan soil are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Somewhat excessively drained Nassau soils are included in areas where the underlying shale bedrock is shallower than 20 inches. Also included are areas underlain by hard, dense graywacke bedrock. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Dutchess soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in solum, strongly acid to slightly acid in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Cardigan soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is well suited to pasture. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity (fig. 9).

The potential productivity of this unit for northern red oak is moderate. Seedling mortality and the windthrow hazard are moderate in areas of Cardigan soils because of droughtiness and depth to bedrock. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across the slope reduce the risk of erosion.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Dutchess soils. Removing stones will reduce the stoniness limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. Slow percolation is the main limitation in areas of Dutchess soils. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be located in areas of very deep Dutchess soils. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Frost action and variable depth to bedrock are the main limitations for local roads and streets. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Uneven slopes and rock outcroppings over portions of the unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Careful site selection and grading will reduce these limitations.

The capability subclass is IIs.

DwC—Dutchess-Cardigan complex, rolling, rocky

This unit consists of very deep, well drained Dutchess soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded shale bedrock. Dutchess soils are commonly on lower concave slopes and Cardigan soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 40 percent Dutchess soils, 30 percent Cardigan soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Dutchess and Cardigan soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 500 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in

depressions and along drainageways. Somewhat excessively drained Nassau soils are included in areas where the underlying shale bedrock is shallower than 20 inches. Also included are areas underlain by hard, dense graywacke bedrock. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of Dutchess soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in solum, strongly acid to slightly acid in substratum
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Cardigan soil—

Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality and windthrow

Figure 9.—Dutchess-Cardigan complex, undulating, rocky, is well suited for pasture.

hazard are moderate in areas of Cardigan soils because of droughtiness and depth to bedrock. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across the slope reduce the risk of erosion.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Dutchess soils. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slow percolation is the main limitation if Dutchess soils are used for septic tank absorption fields. Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations for septic tank absorption fields. Slope is also a limitation. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be located in areas of very deep Dutchess soils. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Slope, frost action, and variable depth to bedrock are the main limitations if this map unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Rolling uneven slopes and rock outcroppings over portions of the unit are the main limitations for camping and picnic areas and playgrounds. Careful site selection and grading will reduce these limitations.

The capability subclass is IIIe.

DwD—Dutchess-Cardigan complex, hilly, rocky

This unit consists of very deep, well drained Dutchess soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded shale bedrock. Dutchess soils are commonly on lower concave slopes and Cardigan soils are commonly on upper slopes and near areas of rock outcrop. This map unit consists of about 40 percent Dutchess soils, 30 percent Cardigan soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Dutchess and Cardigan soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 550 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of somewhat excessively drained Nassau soils where the underlying bedrock is shallower than 20 inches. Some areas are underlain by hard, dense graywacke bedrock. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Dutchess soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in the solum, strongly acid to slightly acid in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Cardigan soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of slope. Pasture is a better use, but suitability is only poor.

Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality and windthrow hazard are moderate in areas of Cardigan soils because of droughtiness and depth to bedrock. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Depth to bedrock in areas of Cardigan soils, rock outcroppings over portions of the unit, and slope are the main limitations if this map unit is used for dwellings with basements. Erosion is a severe hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Dutchess soils. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slow percolation and slope is the main limitation if this map unit is used for septic tank absorption fields in areas of Dutchess soils. Depth to bedrock and slope are the main limitations in areas of Cardigan soils. Uneven slopes, rock outcrops, and variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be located in areas of very deep Dutchess soils. Modifying a conventional system by extending the length of the distribution lines and placing the lines on the contour will allow onsite sewage disposal in some places. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Slope is the main limitation if this map unit is used for local roads and streets. Frost action and variable depth to bedrock are also limitations. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this map unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

DxB—Dutchess-Cardigan-Urban land complex, undulating, rocky

This unit consists of very deep, well drained Dutchess soils, moderately deep, well drained Cardigan soils, and urban land. It is on hilltops and undulating till plains underlain by folded shale bedrock. Dutchess soils are commonly on lower concave slopes and Cardigan soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. This unit consists of about 25 percent Dutchess soils, 25 percent Cardigan soils, 25 percent urban land, and 25 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Dutchess and Cardigan soils, urban land, and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval, irregularly shaped, or rectangular. They commonly range from 5 to 600 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are in depressions and along drainageways. Also included are areas of somewhat excessively drained Nassau soils where the underlying bedrock is shallower than 20 inches and areas where the bedrock is hard, dense graywacke. Areas of Udorthents are included adjacent to buildings and other structures. Inclusions and rock outcrop make up about 25 percent of the unit.

Important soil properties of the Dutchess soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in the solum, and strongly acid to slightly acid in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Cardigan soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are in lawns, gardens, and woodland or brushland between structures.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Dutchess soils. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations for septic tank absorption fields. Slow percolation is the main limitation in areas of Dutchess soils. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be located in areas of very deep Dutchess soils. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Frost action and variable depth to bedrock are the main limitations if this unit is used for local roads and streets. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Uneven slopes and rock outcroppings over portions of the unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Careful site selection and grading will reduce these limitations.

A capability subclass is not assigned for this unit.

DxC—Dutchess-Cardigan-Urban land complex, rolling, rocky

This unit consists of very deep, well drained Dutchess soils, moderately deep, well drained Cardigan soils, and urban land. It is on hilltops and side slopes that are underlain by folded shale bedrock. Dutchess soils are commonly on lower concave slopes and Cardigan soils are commonly on upper slopes, hilltops, and near areas of rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The unit consists of about 25 percent Dutchess soils, 25 percent Cardigan soils, 25 percent urban land, and 25 percent other soils and rock outcrop. The Dutchess

and Cardigan soils, urban land, and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval, irregularly shaped, or rectangular. They commonly range from 5 to 600 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Dutchess soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam

Subsoil:
8 to 17 inches, yellowish brown silt loam
17 to 28 inches, dark yellowish brown silt loam

Substratum:
28 to 46 inches, yellowish brown channery silt loam
46 to 86 inches, light olive brown channery silt loam

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways. Also included are areas of somewhat excessively drained Nassau soils where the underlying bedrock is shallower than 20 inches and areas where the underlying bedrock is hard, dense graywacke. Areas of Udorthents are included adjacent to buildings and other structures. Inclusions and rock outcrop make up about 25 percent of the unit.

Important soil properties of the Dutchess soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid in the solum, and strongly acid to slightly acid in the substratum
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Cardigan soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are in lawns, gardens, and woodland or brushland between structures.

Depth to bedrock in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Dutchess soils. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock and slope in areas of Cardigan soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. Slow percolation and slope are the main limitations in areas of Dutchess soils. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, septic tank absorption fields should be located in areas of very deep Dutchess soils. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places.

Slope, frost action, and variable depth to bedrock are the main limitations if this unit is used for local roads and streets. Constructing roads on the contour will reduce the slope. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

This unit has few limitations for trails. Rolling,

uneven slopes and rock outcroppings over portions of the unit are the main limitations for camping and picnic areas and playgrounds. Careful site selection and grading will reduce these limitations.

A capability subclass is not assigned for this unit.

FcB—Farmington-Galway complex, undulating, very rocky

This unit consists of shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, well drained and moderately well drained Galway soils that formed in glacial till deposits. It is on hilltops, narrow ridges, and till plains that are underlain by folded limestone bedrock. Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop and Galway soils are commonly on lower concave slopes. This unit consists of about 40 percent Farmington soils, 30 percent Galway soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Farmington and Galway soils and rock outcrop are in such and intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in surface, moderately acid to mildly alkaline in subsoil
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for pasture or woodland. Other areas are used for residential development.

This unit is unsuited to cultivated crops because of the depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is only poor. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Seedling mortality is severe because of droughtiness. Windthrow hazard is moderate because

of the shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for dwellings with basements. The seasonal high water table is also a limitation in areas of Galway soils. Short uneven slopes are also a limitation. Erosion is a moderate hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for septic tank absorption fields. The seasonal high water table is also a limitation in areas of Galway soils. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for local roads and streets. The seasonal high water table is also a limitation in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas and providing a coarse grained subgrade to frost depth will reduce wetness.

Shallow depth to bedrock and rock outcroppings over portions of this unit are the main limitations for camping and picnic areas and playgrounds. The seasonal high water table is also a limitation for camping and picnic areas, playgrounds, and trails in areas of Galway soils. Slope and small stones are also limitations for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations for camping and picnic areas and playgrounds. Water bars and diverting runoff from higher areas will reduce wetness for trails.

The capability subclass is VIs.

FcC—Farmington-Galway complex, rolling, very rocky

This unit consists of shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, well drained and moderately well drained Galway soils that formed in glacial till. It is on hilltops, narrow ridges, and side slopes that are underlain by folded limestone bedrock. Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop and Galway soils are commonly on lower concave slopes. This unit consists of about 40 percent Farmington soils, 30 percent Galway soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Farmington and Galway soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 450 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of this map unit.

Important soil properties of Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: medium
Erosion Hazard: moderate

Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for pastureland or woodland. Other areas are used for residential development.

This unit is unsuited to cultivated crops because of the depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is only poor. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Seedling mortality is severe because of droughtiness. Windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The seasonal high water table is also a limitation in areas of Galway soils. Short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. The seasonal high water table in areas of Galway soils is also a limitation. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for local roads and streets. Seasonal wetness is also a limitation in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas and providing a coarse grained subgrade to frost depth will reduce wetness.

Shallow depth to bedrock and rock outcroppings over portions of this unit are the main limitations for camping and picnic areas and playgrounds. The seasonal high water table is also a limitation for camping and picnic areas, playgrounds, and trails in areas of Galway soil. Slope is also a limitation for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce the limitations for camping and picnic areas and playgrounds. Water bars will reduce wetness for trails.

The capability subclass is VIs.

FcD—Farmington-Galway complex, hilly, very rocky

This unit consists of shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, well drained and moderately well drained Galway soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded limestone bedrock. Farmington soils are commonly on upper slopes and near areas of rock outcrop and Galway soils are commonly on lower concave slopes. This unit consists of about 40 percent Farmington soils, 30 percent Galway soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Farmington and Galway soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils along drainageways and in depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of the depth to bedrock, rock outcroppings over portions of the unit, and slope. Pasture is a better use, but the suitability is only poor. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is severe because of droughtiness, and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Shallow depth to bedrock, rock outcroppings over portions of the unit, the seasonal high water table in areas of Galway soils, and slope are the main limitations if this map unit is used for dwellings with basements. Short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a deeper, less sloping inclusion or nearby soil.

Shallow depth to bedrock, rock outcroppings over portions of the unit, the seasonal high water table in areas of Galway soils, and slope are the main limitations if this map unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper, less sloping inclusion or nearby soil.

Shallow depth to bedrock, rock outcroppings over portions of the unit, and slope are the main limitations if this map unit is used for local roads and streets. The seasonal high water table is also a limitation in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Constructing

roads on the contour or locating them in less sloping inclusions will reduce the slope limitation. Diverting runoff from higher areas and providing a coarse grained subgrade to frost depth will reduce wetness.

Slope and the seasonal high water table in Galway soils are the main limitations for trails. Constructing trails with switchbacks, log steps, and water bars will reduce these limitations.

The capability subclass is VIs.

FeE—Farmington-Rock outcrop complex, steep

This unit consists of shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits and areas of rock outcrop. It is on hills and side slopes that are underlain by folded limestone bedrock. This unit consists of about 60 percent Farmington soils, 20 percent rock outcrop, and 20 percent other soils. The Farmington soils and areas of rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are complex and range from 25 to 65 percent.

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Typically the rock outcrop consists of folded and tilted limestone.

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Well drained and moderately well drained Galway soils are included where the underlying limestone bedrock is between 20 and 40 inches deep. Inclusions make up about 20 percent of the unit.

Important soil properties of Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of the steep slope, shallow depth to bedrock, and frequent rock outcroppings.

The potential productivity for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is severe because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used as a site for dwellings with basements, or for septic tank absorption fields. A pollution hazard exists for septic tank absorption fields because the soil is not thick enough to filter effluent. A more suitable site for these uses should be selected in a deeper, less sloping inclusion or nearby soil.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

Steep slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce this limitation.

The capability subclass is VIIs.

Ff—Fluvaquents-Udifluvents complex, frequently flooded

This unit consists of nearly level, very deep, somewhat poorly drained to very poorly drained Fluvaquents and very deep, moderately well drained to somewhat excessively drained Udifluvents. It is on the most active part of flood plains. It is subject to frequent flooding from nearby streams, which results in stream scour, lateral erosion, and shifting of soil from place to place. Soil characteristics such as

texture, gravel content, and drainage are so variable within short distances that mapping individual soil series was not practical. Fluvaquents are commonly in lower, wetter areas and Udifluvents are commonly on higher, drier areas. This unit consists of about 50 percent Fluvaquents, 40 percent Udifluvents, and 10 percent other soils. The Fluvaquents and Udifluvents are in such an intricate pattern that they were not separated in mapping. Areas are elongated or irregularly shaped. They commonly range from 5 to 300 acres. Slopes ranges from 0 to 3 percent.

The sequence, depth, and composition of the layers of Fluvaquents is variable, but the range is as follows—

Surface layer:
Color: Black, gray, brown
Thickness: 16 to 40 inches
Texture: stratified layers of loamy material with less than 15 percent rock fragments

Substratum:
Color: gray, brown, yellowish brown, usually with mottles
Thickness: 40 to 80 inches
Texture: stratified layers of loamy or sandy materials with varying amounts of rock fragments, usually more than 35 percent

The sequence, depth, and composition of layers of Udifluvents is variable, but the range is as follows—

Surface layer:
Color: brown
Thickness: 5 to 35 inches
Texture: sandy loam, fine sandy loam, loam, or silt loam, with up to 50 percent rock fragments

Substratum:
Color: brown, gray, olive
Thickness: 45 to 75 inches
Texture: sand or loam, with 35 to 70 percent rock fragments

Included in this unit in mapping are a few small areas that do not flood frequently. Also included are areas of well drained Wappinger soils, moderately well drained Pawling soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Areas of very poorly drained Carlisle and very poorly drained Palms soils, formed in organic deposits, are included in depressions. Also included are small areas of the fan phases of somewhat excessively drained Hoosic and well drained Copake soils. Inclusions make up about 10 percent of the unit.

Important soil properties of Fluvaquents—

Parent Material: recent alluvium
Permeability: very rapid to slow
Available Water Capacity: high to low
Soil Reaction: strongly acid to mildly alkaline
Surface Runoff: slow to ponded
Erosion Hazard: moderate (streambank)
Depth to Seasonal High Water Table: +0.5 to 1.5 foot (Oct-June)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: frequent, brief to long (Oct-June)

Important soil properties of Udifluvents—

Parent Material: recent alluvium
Permeability: very rapid to slow
Available Water Capacity: high to low
Soil Reaction: very strongly acid to mildly alkaline
Surface Runoff: slow to ponded
Erosion Hazard: moderate (streambank)
Depth to Seasonal High Water Table: 2.0 to 6.0 feet (Nov-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: frequent, very brief to brief (Oct-June)

Most areas of this unit are used for woodland or water tolerant bushes or grasses.

This unit is unsuited to cultivated crops, pasture, and timber production because of frequent flooding and the seasonal high water table.

Frequent flooding and the high seasonal high water table are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Slow percolation is also a limitation for septic tank absorption fields. Frost action is also a limitation for local roads and streets. A more suitable site for all of these uses should be selected on a drier soil that does not flood.

The capability subclass is Vw.

Fr—Fredon silt loam

This map unit consists of very deep, nearly level, and somewhat poorly drained soils that formed in glacial outwash deposits. It is in depressions and along drainageways on valley floors and outwash plains. Areas are oval, elongated or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Fredon soils are as follows—

Surface layer:
Surface to 9 inches, very dark grayish brown silt loam

Subsoil:
9 to 14 inches, light olive gray silt loam with mottles
14 to 22 inches, gray very fine sandy loam with mottles
22 to 29 inches, gray loam with mottles
29 to 31 inches, light olive brown gravelly loam with mottles

Substratum:
31 to 70 inches, brown very gravelly loamy fine sand

Included in mapping are areas of a similar soil that is poorly drained. Poorly drained and very poorly drained Halsey soils are included in depressions and along drainageways. Also included are areas of moderately well drained glacial outwash soils. Inclusions make up about 15 percent of the unit.

Important soil properties of Fredon soil—

Parent Material: glacial outwash
Permeability: moderate in the surface layer, moderately slow or moderate in the subsoil, and rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: moderately acid to neutral in the surface and subsoil, and slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 0.5 to 1.5 feet (Oct-June)
Rooting Zone: restricted by high a water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare

Where drained, this map unit meets the criteria for prime farmland. Most areas are in cultivated cropland, woodland, or brushland. Other areas are in pasture or residential development.

This map unit is moderately suited to cultivated crops. Where drained, this map unit is well suited to cultivated crops. Tile drains covered with filter material work well, but this map unit is in low positions in the landscape and suitable outlets are difficult to establish. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is moderately suited to pasture. Where drained, this map unit is well suited to pasture. Tile drains covered with filter material work well, but this map unit is in low positions in the landscape and suitable outlets may be hard to establish. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Seedling mortality is high and windthrow hazard is severe because of the seasonal high water table. Wetness severely limits the operation of equipment.

The seasonal high water table and rare flooding are the main limitations if this unit is used for dwellings with basements. Building dwellings with raised foundations, subsurface drainage, footing or foundation drains, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce the wetness and flooding limitations. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering, the seasonal high water table, and rare flooding are the main limitations if this map unit is used for septic tank absorption fields. There is a severe hazard of groundwater pollution because of the seasonal high water table and the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less sandy and gravelly soil that does not flood.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Rare flooding is also a limitation. Providing a drainage system and a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table and rare flooding are the main limitations if this unit is used for camping and picnic areas, playgrounds, and trails. Subsurface drainage and diverting runoff from higher areas will reduce these limitations.

The capability subclass is IIIw.

GfB—Galway-Farmington complex, undulating, rocky

This unit consists of moderately deep, well drained and moderately well drained Galway soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hilltops and till plains that are underlain by folded limestone bedrock. Galway soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 40 percent Galway soils, 30 percent Farmington soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Galway and

Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 350 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of this map unit.

Important soil properties of Galway the soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for pastureland or woodland. Other areas are used for cropland or residential development.

This unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion may be a hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high and moderate. Seedling mortality is high in areas of Farmington soils because of droughtiness, and windthrow hazard is moderate because of the shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The seasonal high water table is also a limitation in areas of Galway soils. Short uneven slopes are also a limitation. Erosion is a moderate hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of

vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. The seasonal high water table is also a limitation in areas of Galway soils. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Depth to bedrock and rock outcroppings over portions of this unit are the main limitations for local roads and streets. The seasonal high water table is also a limitation in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas will reduce wetness.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. The seasonal high water table is also a limitation for camping and picnic areas, playgrounds, and trails in areas of Galway soils. Slope and small stones are also limitations for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations for camping and picnic areas and playgrounds. Water bars and diverting runoff from higher areas will reduce wetness for trails.

The capability subclass is IIs.

GfC—Galway-Farmington complex, rolling, rocky

This unit consists of moderately deep, well drained and moderately well drained Galway soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded limestone bedrock. Galway soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 40 percent Galway soils, 30 percent Farmington soils, and 30 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Galway and Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched from 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: medium
Erosion Hazard: moderate

Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for pastureland or woodland. Other areas are used for cropland or residential development.

This unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high to moderate. Seedling mortality is high in areas of Farmington soils because of droughtiness, and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness. Logging trails laid out across slopes reduce the risk of erosion.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The seasonal high water table is also a limitation in areas of Galway soils. Short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. The seasonal high water table in areas of Galway soils is also a limitation. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Depth to bedrock and rock outcroppings over portions of this unit are the main limitations for local roads and streets. The seasonal high water table and frost action in areas of Galway soils and slope are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas and providing a coarse grained subgrade to frost depth will reduce wetness and frost action. Constructing roads on the contour will reduce the slope limitation.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations for camping and picnic areas and playgrounds. The seasonal high water table in areas of Galway soils is also a limitation for camping and picnic areas, playgrounds, and trails. Slope is also a limitation if this unit is used for camping and picnic areas and for playgrounds. Small stones are also a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations for camping and picnic areas and playgrounds. Water bars will reduce wetness for trails.

The capability subclass is IIIe.

GfD—Galway-Farmington complex, hilly

This unit consists of moderately deep, well drained and moderately well drained Galway soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded limestone bedrock. Galway soils are commonly on lower concave slope and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 40 percent Galway soils, 35 percent Farmington soils, and 25 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Galway and Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils along drainageways and in depressions. Also included are areas of well drained Stockbridge soils where the underlying bedrock is deeper than 60 inches. Inclusions and rock outcrop make up about 25 percent of the unit.

Important soil properties of the Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are for pasture or residential development.

This unit is unsuited to cultivated crops because of slope. Pasture is a better use, but the suitability is only poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high to moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is high in areas of Farmington soils because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes, reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Depth to bedrock, rock outcroppings over portions of the unit, the seasonal high water table in areas of Galway soils, and slope are the main limitations if this unit is used for dwellings with basements. Short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping, deeper inclusion or nearby soil.

Depth to bedrock, rock outcroppings over portions of the unit, the seasonal high water table in areas of Galway soils, and slope are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper, less sloping inclusion or nearby soil.

Depth to bedrock, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used for local roads and streets. The seasonal high water table and frost action are also limitations in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Diverting runoff from higher areas and providing a coarse grained subgrade to frost depth will reduce wetness and frost action.

Slope and the seasonal high water table in areas of Galway soils are the main limitations for trails.

Constructing trails with switchbacks, log steps, and water bars will reduce these limitations.

The capability subclass is VIe.

GlB—Galway-Farmington-Urban land complex, undulating, rocky

This unit consists of moderately deep, well drained and moderately well drained Galway soils; shallow, well drained and somewhat excessively drained Farmington soils; and urban land. It is on hilltops and till plains that are underlain by folded limestone bedrock. Galway soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 30 percent Galway soils, 25 percent Farmington soils, 25 percent urban land, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Galway and Farmington soils, urban land, and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Areas of well drained Stockbridge soils are included where the underlying bedrock is deeper than 60 inches. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions and rock outcrop make up about 20 percent of the map unit.

Important soil properties of the Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline and moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Farmington soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are used for lawns, gardens, and woodland or brushland between structures.

Depth to bedrock, rock outcroppings over portions of the unit, and the seasonal high water table in areas of Galway soils are the main limitations if this unit is used for dwellings with basements. Short uneven slopes are also a limitation. Erosion is a moderate hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and

quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock, rock outcroppings over portions of the unit, and the seasonal high water table in areas of Galway soils are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Depths to bedrock and rock outcroppings over portions of this unit are the main limitations if this unit is used for local roads and streets. The seasonal high water table is also a limitation in areas of Galway soils. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas will reduce wetness.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. The seasonal high water table is also a limitation in areas of Galway soils for camping and picnic areas, playgrounds, and trails. Slope and small stones are also limitations for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations for camping and picnic areas and playgrounds. Water bars and diverting runoff from higher areas will reduce wetness for trails.

A capability subclass is not assigned for this unit.

GlC—Galway-Farmington-Urban land complex, rolling, rocky

This unit consists of moderately deep, well drained and moderately well drained Galway soils; shallow, well drained and somewhat excessively drained Farmington soils; and urban land. It is on hilltops and till plains that are underlain by folded limestone bedrock. Galway soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 30 percent Galway soils, 25 percent Farmington soils, 25 percent urban land, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Galway and Farmington soils, urban land, and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Galway soils are as follows—

Surface layer:
Surface to 6 inches, dark brown gravelly loam

Subsoil:
6 to 10 inches, dark yellowish brown gravelly loam
10 to 30 inches, dark brown gravelly loam

Substratum:
30 to 31 inches, dark brown gravelly loam

Bedrock:
31 inches, white limestone

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Areas of well drained Stockbridge soils are included where the underlying bedrock is deeper than 60 inches. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions and rock outcrop make up about 20 percent of the map unit.

Important soil properties of the Galway soil—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: moderately acid to neutral in the surface, moderately acid to mildly alkaline in the subsoil, mildly alkaline or moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Mar-Apr)
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Farmington soil—

Parent Material: glacial till

Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

This unit is used for urban and suburban development. The open areas are used for lawns, gardens, and woodland or brushland between structures.

Depth to bedrock, rock outcroppings over portions of the unit, and the seasonal high water table in areas of Galway soils are the main limitations if this unit is used for dwellings with basements. Short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock, rock outcroppings over portions of the unit, and the seasonal high water table in areas of Galway soils are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Depth to bedrock and rock outcroppings over portions of this unit are the main limitations for local roads and streets. The seasonal high water table in areas of Galway soils and slope are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Diverting runoff from higher areas and providing a coarse subgrade will reduce wetness and frost action. Constructing roads on the contour will reduce the slope limitation.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. The seasonal high water table in areas of Galway soils is also a limitation for camping and picnic areas, playgrounds, and trails. Slope is a limitation for camping and picnic areas and playgrounds. Small stones are a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations for camping and picnic areas and playgrounds. Water bars will reduce wetness for trails.

A capability subclass is not assigned for this unit.

GsA—Georgia silt loam, 0 to 3 percent slopes

This map unit consists of very deep, nearly level, and moderately well drained soils that formed in glacial till deposits. It is on broad hilltops, concave footslopes, and along drainageways on till plains. The areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 250 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Georgia soils are as follows—

Surface layer:
Surface to 8 inches, very dark brown silt loam

Subsoil:
8 to 17 inches, olive brown loam
17 to 21 inches, olive brown loam with mottles
21 to 27 inches, olive brown gravelly fine sandy loam with mottles

Substratum:
27 to 80 inches, olive gravelly fine sandy loam with mottles

Included with this map unit in mapping are areas of well drained Charlton soils, Stockbridge soils, and Dutchess soils on slightly higher areas. Also included are areas of somewhat poorly drained Massena soils in slightly lower areas and poorly drained and very poorly drained Sun soils in depressions and along drainageways. Areas of somewhat poorly drained Punsit soils are included where the substratum is denser. Inclusions make up about 20 percent of the map unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsoil, slightly acid to neutral in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Nov- May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture.

Other areas are used for woodland or residential development.

This map unit is well suited to cultivated crops. The seasonal high water table can delay spring tillage. Tile drainage and diversions will reduce wetness. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for sugar northern red oak is moderately high.

The seasonal high water table is the main limitation if this map unit is used for dwellings with basements. Subsurface drains, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation and the seasonal high water table are the main limitations if this map unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places. Installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness.

Frost action is the main limitation if this map unit is used for local roads and streets. Installing drainage and providing a coarse grained subgrade frost depth will reduce this limitation.

The seasonal high water table is the main limitation if this map unit is used for camping and picnic areas. Small stones are also a limitation for playgrounds. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Adding sandy fill will cover small stones.

The capability subclass is IIw.

GsB—Georgia silt loam, 3 to 8 percent slopes

This map unit consists of very deep, gently sloping, and moderately well drained soils that formed in glacial till deposits. It is on broad hilltops, concave footslopes, and along drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 350 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Georgia soils are as follows—

Surface layer:
Surface to 8 inches, very dark brown silt loam

Subsoil:
8 to 17 inches, olive brown loam
17 to 21 inches, olive brown loam with mottles
21 to 27 inches, olive brown gravelly fine sandy loam with mottles

Substratum:
27 to 80 inches, olive gravelly fine sandy loam with mottles

Included with this map unit in mapping are areas of well drained Charlton soils, Stockbridge soils, and Dutchess soils on slightly higher areas. Also included are somewhat poorly drained Massena soils in slightly lower areas and drainageways. Areas of Pittstown soils are included where the substratum is denser. Inclusions make up about 20 percent of the map unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsoil, slightly acid to neutral in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Nov-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are in woodland or residential development.

This map unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. The seasonal high water table can delay spring tillage. Tile drainage and diversions will reduce wetness. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion.

Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drains, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation and the seasonal high water table are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in many places. Installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness.

Frost action is the main limitation if this unit is used as a site for local roads and streets. Installing drainage and providing a coarse grained subgrade frost depth will reduce this limitation.

The seasonal high water table is the main limitation for camping and picnic areas. Slope and small stones are also limitations for playgrounds. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Grading will reduce the slope limitation and adding sandy fill will cover small stones.

The capability subclass is IIe.

GsC—Georgia silt loam, 8 to 15 percent slopes

This map unit consists of very deep, sloping, and moderately well drained soils that formed in glacial till deposits. Areas are elongated or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Georgia soils are as follows—

Surface layer:
Surface to 8 inches, very dark brown silt loam

Subsoil:
8 to 17 inches, olive brown loam
17 to 21 inches, olive brown loam with mottles
21 to 27 inches, olive brown gravelly fine sandy loam with mottles

Substratum:
27 to 80 inches, olive gravelly fine sandy loam with mottles

Included with this map unit in mapping are areas of well drained Charlton soils, Stockbridge soils, and Dutchess soils in slightly higher areas. Also included are areas of somewhat poorly drained Massena soils in slightly lower areas and poorly drained and very poorly drained Sun soils in depressions and along drainageways. Areas of Pittstown soils are included where the substratum is denser. Inclusions make up about 20 percent of the map unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsoil, slightly acid to neutral in the substratum
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Nov-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. The seasonal high water table can delay spring tillage. Tile drainage and diversions will reduce wetness. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Logging trails laid out across the slopes reduce the risk of erosion.

The seasonal high water table is the main limitation if this map unit is used for dwellings with basements. Slope is also a limitation. Erosion is a moderate hazard during construction. Subsurface drains, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slow percolation and the seasonal high water table are the main limitations if this map unit is used for septic tank absorption fields. Slope is also a limitation. Modifying a conventional system by extending the length of the distribution lines and placing lines on the contour will allow onsite sewage disposal in many places. Installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness.

Frost action is the main limitation for local roads and streets. Slope is also a limitation. Installing drainage and providing a coarse grained subgrade frost depth will reduce frost action. Constructing roads on the contour will reduce the slope limitation.

The seasonal high water table is the main limitation if this map unit is used for camping and picnic areas. Slope and small stones are also limitations for playgrounds. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Grading will reduce the slope limitation, and adding sandy fill will cover small stones.

The capability subclass is IIIe.

Ha—Halsey mucky silt loam

This map unit consists of very deep, nearly level, poorly drained and very poorly drained soils that formed in glacial outwash deposits. It is along drainageways and in depressions on outwash plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Halsey soils are as follows—

Surface layer:
Surface to 9 inches, black mucky silt loam

Subsoil:
9 to 19 inches, gray silt loam with mottles
19 to 29 inches, gray gravelly loam with mottles
29 to 33 inches, dark gray gravelly sandy loam with mottles

Substratum:
33 to 72 inches, very dark gray loamy sand and gravel

Included in mapping are areas of somewhat poorly drained Fredon soils on slightly higher areas. Areas of very poorly drained Palms soils with an organic layer between 16 and 51 inches thick, and very poorly drained Carlisle soils with an organic layer thicker than 51 inches are also included. Palms and Carlisle soils are in marshy areas. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate in the surface layer, moderate or moderately rapid in the subsoil and rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: moderately acid to neutral in the surface layer and subsoil, slightly acid to moderately alkaline in the substratum
Surface Runoff: slow to ponded
Erosion Hazard: slight
Depth to Seasonal High Water Table: 0 to 0.5 feet (Sept-June)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare (Sept-June)

Most areas of this map unit are used for woodland or water tolerant bushes or grasses.

This map unit is unsuited to cultivated crops and pasture because of the prolonged seasonal high water table and ponding.

The potential productivity for red maple on this map unit is moderate. Seedling mortality is high because of the seasonal high water table. Windthrow hazard is severe because the high water table restricts root growth. Wetness severely limits the operation of equipment.

The seasonal high water table, rare flooding, and ponding are the main limitations if this map unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Poor filtering is also a limitation for septic tank absorption fields. Frost action is also a limitation for local roads and streets. A more suitable site for all of these uses should be selected on a drier soil that does not flood.

This map unit has good potential for wetland wildlife habitat.

The capability subclass is Vw.

HeA—Haven loam, nearly level

This map unit consists of very deep, and well drained soils that formed in glacial outwash deposits. It is on valley floors and outwash plains. Areas are irregularly shaped. They commonly range from 5 to 600 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Haven soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 12 inches, dark yellowish brown loam
12 to 19 inches, dark yellowish brown gravelly loam
19 to 23 inches, dark yellowish brown gravelly sandy loam

Substratum:
23 to 72 inches, brown very gravelly sand

Included in mapping are areas of somewhat excessively drained sandy and gravelly Hoosic soils and somewhat excessively drained sandy Knickerbocker soils. Also included are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops. Other areas are used as pasture, woodland, or residential development.

This map unit is very well suited to cultivated crops. Lack of moisture during dry periods is a limitation, but the use of irrigation increases productivity. Cover crops, conservation tillage, and crop rotations will reduce any erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Overgrazing is a major concern of pasture management as it causes reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting seedlings in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution from absorption fields because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Frost action is the main limitation if this map unit is used for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for camping and picnic areas and trails. Small stones are the main limitation if this map unit is used for playgrounds. Adding sandy fill will cover the small stones.

The capability class is I.

HeB—Haven loam, undulating

This map unit consists of very deep and well drained soils that formed in glacial outwash deposits. It is on valley floors and outwash plains. Areas are oval or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of Haven soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 12 inches, dark yellowish brown loam
12 to 19 inches, dark yellowish brown gravelly loam
19 to 23 inches, dark yellowish brown gravelly sandy loam

Substratum:
23 to 72 inches, brown very gravelly sand

Included with this map unit in mapping are areas of

somewhat excessively drained sandy and gravelly Hoosic soils and somewhat excessively drained sandy Knickerbocker soils. Also included are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderate in the surface layer and subsoil, and very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This map unit meets the criteria for prime farmland. Most areas are used for cultivated crops. Other areas are used for pasture, woodland, or residential development.

This map unit is well suited to cultivated crops. Erosion is a hazard, particularly on areas left bare of plant cover. Lack of moisture during dry periods is a limitation, but the use of irrigation increases productivity. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is very well suited to pasture. Overgrazing is a major concern of pasture management as it causes reduction or loss or desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderate. Planting seedlings in the spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Frost action is the main limitation for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for camping and picnic areas or trails. Slope and small stones are the main limitations for playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is IIe.

Hf—Haven-Urban land complex

This unit consists of very deep, nearly level, well drained Haven soils and urban land. It is on valley floors and outwash plains. This unit consists of about 40 percent Haven soils, 35 percent urban land, and 25 percent other soils. The Haven soils and urban land are in such an intricate pattern that they were not mapped separately. Areas are irregularly shaped or rectangular. They commonly range from 5 to 300 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Haven soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 12 inches, dark yellowish brown loam
12 to 19 inches, dark yellowish brown gravelly loam
19 to 23 inches, dark yellowish brown gravelly sandy loam

Substratum:
23 to 72 inches, brown very gravelly sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of somewhat excessively drained sandy and gravelly Hoosic soils and somewhat excessively drained sandy Knickerbocker soils. Also included are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Areas of Udorthents are included adjacent to buildings and other

structures. Inclusions make up about 25 percent of the unit.

Important soil properties of the Haven soil—

Parent Material: glacial outwash
Permeability: moderate in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: moderate
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is used as urban and suburban development. The open areas are used as lawns, gardens, and woodland or brushland between structures.

This unit has few limitations for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This map unit has few limitations for camping and picnic areas or trails. Small stones are the main limitation for playgrounds. Adding sandy fill will cover the small stones.

A capability subclass is not assigned for this unit.

HoC—Hollis-Chatfield-Rock outcrop complex, rolling

This unit consists of shallow, well drained and somewhat excessively drained Hollis soils, moderately deep, well drained and somewhat excessively drained Chatfield soils, and areas of rock outcrop. It is on hilltops and narrow ridges underlain by folded schist, granite, or gneiss bedrock. Hollis soils are commonly on upper areas near rock outcrop and Chatfield soils are commonly on lower concave areas. This unit consists of about 35 percent Hollis soils, 30 percent Chatfield soils, 15 percent rock outcrop, and 20 percent other soils. The Hollis and Chatfield soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are oval or irregularly shaped. They commonly range from 5 to 400 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface layer:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown very fine sandy loam

Bedrock:
15 inches, folded micaceous schist

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Typically, the rock outcrop consists of folded and tilted schist, granite, or gneiss.

Included with this unit in mapping are areas of somewhat poorly drained Massena soils and poorly drained and very poorly drained Sun soils. Massena soils are in concave areas and Sun and soils are in depressions and along drainageways. Also included are areas of well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions make up about 20 percent of the unit.

Important soil properties of Hollis soil—

Parent Material: glacial till
Permeability: moderate to moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are used as residential development.

This unit is unsuited to cultivated crops and pasture because of the shallow depth to bedrock and frequent rock outcroppings. Erosion is a moderate hazard.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate because of droughtiness. Windthrow hazard is severe because of shallow depth to bedrock. Logging trails laid out across the slope will reduce the risk of erosion. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Shallow depth to bedrock and frequent rock outcroppings are the main limitations if this unit is used as a site for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation.

Shallow depth to bedrock and frequent rock outcroppings are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be considered in a deeper inclusion or nearby soil.

Shallow depth to bedrock and frequent rock outcroppings are the main limitations if this unit is used as a site for local roads and streets. Slope and frost action are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

This unit does not have limitations for trails. The capability subclass is VIs.

HoD—Hollis-Chatfield-Rock outcrop complex, hilly

This unit consists of shallow, well drained and somewhat excessively drained Hollis soils; moderately deep, well drained and somewhat excessively drained Chatfield soils; and areas of rock outcrop. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Hollis soils are commonly on upper slopes and near areas of rock outcrop and Chatfield soils are commonly on lower concave slopes. This unit consists of about 40 percent Hollis soils, 30 percent Chatfield soils, 15 percent rock outcrop, and 15 percent other soils. The Hollis and Chatfield soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated or irregularly shaped. They commonly range from 5 to 2000 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface layer:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown very fine sandy loam

Bedrock:
15 inches, folded micaceous schist

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Typically, the rock outcrop consists of folded and tilted schist, granite, or gneiss.

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions make up about 15 percent of the unit.

Important soil properties of the Hollis soil—

Parent Material: glacial till
Permeability: moderate and moderately rapid
Available Water Capacity: very low

Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most of areas of this unit are used for woodland. Other areas are used for residential development.

This unit is unsuited to cultivated crops and pasture because of shallow depth to bedrock, frequent rock outcroppings, and slope. Erosion is a severe hazard.

The potential productivity of this unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness. Logging trails, with water bars, laid out across slopes reduce the risk of erosion.

Shallow depth to bedrock, frequent rock outcroppings, and slope are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation. A more suitable site should be considered on a deeper, less sloping inclusion or nearby soil.

Shallow depth to bedrock, frequent rock outcroppings, and slope are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper, less sloping inclusion or nearby soil.

Shallow depth to bedrock, frequent rock outcroppings, and slope are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIs.

HoE—Hollis-Chatfield-Rock outcrop complex, steep

This unit consists of shallow, well drained and somewhat excessively drained Hollis soils; moderately deep, well drained and somewhat excessively drained Chatfield soils; and areas of rock outcrop. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Hollis soils are commonly on upper slopes and near areas of rock outcrop and Chatfield soils are commonly on lower concave slopes. This unit consists of about 40 percent Hollis soils, 30 percent Chatfield soils, 20 percent rock outcrop, and 10 percent other soils. The Hollis and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas of this unit are elongated or irregularly shaped. They commonly range from 5 to 600 acres. Slopes are complex and range from 25 to 45 percent.

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown very fine sandy loam

Bedrock:
15 inches, folded micaceous schist

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Typically, the rock outcrop consists of folded and tilted schist, granite, or gneiss.

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Also included are areas of very deep well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions make up about 10 percent of the unit.

Important soil properties of the Hollis soil—

Parent Material: glacial till
Permeability: moderate and moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by depth of bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Permeability: glacial till
Available Water Capacity: moderate and moderately rapid
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of steep slope, shallow depth to bedrock, and frequent rock outcroppings.

The potential productivity of this unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements or septic tank absorption fields. A pollution hazard exists for septic tank absorption fields because the thin soil is not thick enough to filter effluent. A more suitable site for these uses should be selected in a deeper, less steep inclusion or nearby soil.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchback, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

HoF—Hollis-Chatfield-Rock outcrop complex, very steep

This unit consists of shallow, well drained and somewhat excessively drained Hollis soils; moderately deep, well drained and somewhat excessively drained Chatfield soils; and areas of rock outcrop. It is on hills and side slopes that are underlain by folded schist, granite, or gneiss bedrock. Hollis soils are commonly on upper areas near rock outcrop and Chatfield soils are commonly on lower concave areas. This unit consists of about 40 percent Hollis soils, 25 percent Chatfield soils, 25 percent rock outcrop, and 10 percent other soils. The Hollis and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas of this unit are elongated or irregularly shaped. They commonly range from 5 to 3000 acres. Slopes are complex and range from 45 to 70 percent.

The typical sequence, depth, and composition of the layers of Hollis soils are as follows—

Surface:
Surface to 3 inches, dark grayish brown loam

Subsoil:
3 to 10 inches, dark yellowish brown loam
10 to 15 inches, olive brown very fine sandy loam

Bedrock:
15 inches, folded micaceous schist

The typical sequence, depth, and composition of the layers of Chatfield soils are as follows—

Surface layer:
Surface to 9 inches, dark brown fine sandy loam

Subsoil:
9 to 23 inches, olive brown loam
23 to 27 inches, dark grayish brown gravelly fine sandy loam

Substratum:
27 to 30 inches, dark grayish brown gravelly fine sandy loam

Bedrock:
30 inches, folded micaceous schist and granite

Typically, the rock outcrop consists of folded and tilted schist, granite, or gneiss.

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Also included are areas of very deep, well drained Charlton soils where the underlying bedrock is deeper than 60 inches. Inclusions make up about 10 percent of the unit.

Important soil properties of the Hollis soil—

Parent Material: glacial outwash
Permeability: moderate and moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Chatfield soil—

Parent Material: glacial till
Permeability: moderate and moderately rapid
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used as woodland.

This unit is unsuited to cultivated crops and pasture because of very steep slope, shallow depth to bedrock, and frequent rock outcroppings.

The potential productivity of this unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Very steep slopes severely limit the safe operation of equipment.

Very steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements and septic tank absorption fields. A pollution hazard exists for septic tank absorption fields because the thin soil is not thick enough to filter effluent. A more suitable site for these uses should be selected in a deeper, less steep inclusion or nearby soil.

Very steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Very steep slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

HsA—Hoosic gravelly loam, nearly level

This map unit consists of very deep, somewhat excessively drained soils that formed in glacial outwash deposits. It is on valley floors and outwash plains. Areas are irregularly shaped. They commonly range from 5 to 850 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Included in mapping are areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are along drainageways and in depressions. Areas of Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Also included are areas of well drained Copake soils in areas where limestone dominates the rock fragments in the soil. Inclusions make up about 20 percent of the unit.

Important soil properties of the Hoosic soil—

Parent Material: glacial outwash
Permeability: rapid and moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this map unit are used for cultivated cropland. Other areas are used as pastureland, woodland, residential development, or are mined for sand and gravel.

This map unit is moderately suited to cultivated crops. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residue build up soil organic matter content which increases the water holding capacity. Surface stones may interfere with the operation of equipment. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture, but available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and maintaining proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations if used for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This map unit has few limitations for local roads and streets.

This map unit has few limitations for trails. Small stones are the main limitation if this map unit is used for camping and picnic areas and playgrounds. Adding sandy fill will cover small stones.

The capability subclass is IIIs.

HsB—Hoosic gravelly loam, undulating

This map unit consists of very deep, somewhat excessively drained soils that formed in glacial outwash deposits. It is on valley floors and undulating outwash plains. Areas are oval or irregularly shaped. They commonly range from 5 to 500 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of the Hoosic soil are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Included in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Areas of Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Also included are areas of well drained Copake soils in areas where limestone dominates the rock fragments in the soil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: rapid to moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches

Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas are used for cultivated cropland. Other areas are used as pastureland, woodland, residential development, or are mined for sand and gravel.

This map unit is moderately suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues builds up soil organic matter content, which increases water-holding capacity. Surface stones may interfere with the operation of equipment. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture, but available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

This map unit has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This map unit has few limitations for local roads and streets.

This map unit has few limitations for trails. Small stones are the main limitation if this map unit is used for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Adding sandy fill will cover small stones. Grading will reduce the slope limitation.

The capability subclass is IIIs.

HsC—Hoosic gravelly loam, rolling

This map unit consists of very deep and somewhat excessively drained soils that formed in glacial outwash deposits. It is on valley sides and small hills. Areas are elongated or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Hoosic soil are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Included with this unit in mapping are small areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Knickerbocker soils are included in transitional areas approaching finer textured soils. Well drained Copake soils are included in areas where limestone dominates the rock fragments in the soil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: rapid and moderately rapid in the surface and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas are used for cultivated cropland or pastureland. Other areas are mined for sand and gravel or are used for woodland or residential development.

This map unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. In the absence of irrigation, crop yields are severely reduced by moisture

stress during the growing season. The application of manure and return of crop residues build up soil organic matter content, which increases water-holding capacity. Surface stones may interfere with the operation of equipment. Cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This map unit is well suited to pasture, but available moisture for forage is usually limiting. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Slope is the main limitation if this map unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this map unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Slope is the main limitation if this map unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation.

This map unit has few limitations for trails. Slope and small stones are the main limitations if this map unit is used for camping and picnic areas. Slope is a severe limitation for playgrounds. Adding sandy fill will cover small stones. Grading will reduce the slope limitation.

The capability subclass is IIIe.

HsD—Hoosic gravelly loam, hilly

This soil consists of very deep and somewhat excessively drained soils that formed in glacial outwash deposits. It is on valley sides, terrace faces, and hills. Areas are elongated or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Included in this unit in mapping are areas of somewhat poorly drained Fredon soils along drainageways and in depressions. Also included are areas of Knickerbocker soils in transitional areas approaching finer textured soils, and well drained Copake soils in areas where limestone dominates the rock fragments in the soil. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: rapid or moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas are used for pastureland or woodland. Other areas are mined for sand and gravel or are used for residential development.

This soil is unsuited to cultivated crops because of slope. Pasture is a better use, but the suitability is only poor. Available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the

impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Droughtiness can make the establishment and maintenance of lawns difficult. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Poor filtering and slope are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places. A more suitable site should be considered in a less sloping, less sandy and gravelly inclusion or nearby soil.

Slope is the main limitation if this unit is used for local roads and streets.

Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

HsE—Hoosic gravelly loam, 25 to 45 percent slopes

This unit consists of very deep, steep, and somewhat excessively drained soils that formed in glacial outwash deposits. It is on valley sides and terrace faces. Areas are elongated or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Included in this unit in mapping are small areas of somewhat poorly drained Fredon soils along drainageways and in depressions. Areas of finer textured outwash soils with or without rock fragments are included. Also included are small areas of well drained Copake soils in areas where limestone dominates the rock fragments in the soil. Inclusions make up about 15 percent of the unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: rapid or moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid and strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas are used for woodland. Some areas are mined for sand and gravel.

This soil is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity for northern red oak is moderately high. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Planting seedlings in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope is the main limitation if this unit is used for dwellings with basements. Erosion is a very severe hazard during construction. A more suitable site should be selected on a less sloping inclusion or nearby soil.

Steep slope and poor filtering are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a less sloping, less sandy and gravelly inclusion.

Steep slope is the main limitation if this unit is used for local roads and streets. Constructing roads on the

contour or locating them on less sloping inclusions will reduce the slope limitation.

Steep slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIe.

HtA—Hoosic channery loam, fan, 0 to 3 percent slopes

This unit consists of the very deep, nearly level, and well drained Hoosic soils that formed in glacial outwash deposits. It is on outwash fans near streams. Areas are elongated or fan shaped and are traversed by tributary streams in places. They commonly range from 5 to 200 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown channery loam

Subsoil:
9 to 15 inches, yellowish brown channery loam
15 to 24 inches, yellowish brown very channery sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very channery loamy sand

Substratum:
31 to 70 inches, dark brown extremely channery loamy sand

Included with this soil in mapping are small areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Also included are areas of well drained Copake soils where limestone dominates the rock fragments in the soil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash with alluvium
Permeability: rapid and moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 3.0 to 6.0 feet (Mar-Apr)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare, brief

Most areas of this unit are used for cultivated cropland. Other areas are used for pastureland, woodland, or residential development.

This soil is moderately suited to cultivated crops. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues builds up the soil organic matter content, which increases the water holding capacity. In some years, brief flooding damages crops and new seedlings. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture, but available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods or brief periods of flooding, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Rare flooding is the main limitation if this unit is used for dwellings with basements. The seasonal high water table is also a limitation. Droughtiness can make establishment and maintenance of lawns difficult. Building dwellings with raised foundations on higher areas of this unit will reduce the flooding and wetness limitations. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering, the seasonal high water table, and rare flooding are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table. Also, the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less sandy and gravelly inclusion or nearby soil.

Frost action and rare flooding are the main limitations if this unit is used for local roads and streets. Providing a coarse grained subgrade to frost depth will reduce frost action. Constructing roads on raised fill will reduce the flooding limitation.

This soil has few limitations for trails. Rare flooding is the main limitation if this unit is used for camping areas. Small stones are also a limitation for picnic

areas and playgrounds. Adding sandy fill will cover small stones.

The capability subclass is IIIs.

HtB—Hoosic channery loam, fan, 3 to 8 percent slopes

This unit consists of the very deep, gently sloping, and well drained Hoosic soils that formed in glacial outwash deposits. It is on outwash fans near streams. Areas are elongated or fan shaped and are traversed by tributary streams in places. They commonly range from 5 to 200 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown channery loam

Subsoil:
9 to 15 inches, yellowish brown channery loam
15 to 24 inches, yellowish brown very channery sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very channery loamy sand

Substratum:
31 to 70 inches, dark brown extremely channery loamy sand

Included with this soil in mapping are small areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Fredon soils are in slightly lower areas and Halsey soils are in depressions and along drainageways. Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Also included are areas of well drained Copake soils where limestone dominates the rock fragments in the soil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial outwash with alluvium
Permeability: rapid and moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 3.0 to 6.0 feet (Mar-Apr)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: rare, brief

Most areas of this soil are used for cultivated cropland. Other areas are used for pastureland, woodland, or residential development.

This soil is moderately suited to cultivated crops. Erosion may be a hazard, particularly on long slopes or on areas left bare of plant cover. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues build up the soil organic matter content, which increases the water holding capacity. In some years, brief flooding damages crops and new seedlings. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture, but available moisture for forage is usually limiting. Erosion may be a hazard, particularly on long slopes left bare of plant cover. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods or brief periods of flooding, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Rare flooding is the main limitation if this unit is used for dwellings with basements. The seasonal high water table is also a limitation. Droughtiness can make establishment and maintenance of lawns difficult. Building dwellings with raised foundations on higher areas of this soil will reduce the flooding and wetness limitations. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering, the seasonal high water table, and rare flooding are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table. Also, the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less sandy and gravelly inclusion or nearby soil.

Frost action and rare flooding are the main limitations if this unit is used for local roads and streets. Providing a coarse grained subgrade to frost depth will reduce frost action. Constructing roads on raised fill will reduce the flooding limitation.

This soil has few limitations for trails. Rare flooding is the main limitation if this unit is used for camping

areas. Small stones are the main limitation if this unit is used for picnic areas and playgrounds. Slope is also a limitation for playgrounds. Adding sandy fill will cover small stones. Grading will reduce the slope limitation.

The capability subclass is IIIs.

HuA—Hoosic-Urban land complex, nearly level

This unit is very deep and somewhat excessively drained. It is on valley floors and outwash plains. This unit consists of about 40 percent Hoosic soils, 35 percent urban land, and 25 percent other soils. The Hoosic soils and urban land are in such an intricate pattern that they were not mapped separately. Areas are irregularly shaped or rectangular. They commonly range from 5 to 200 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam
24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces, which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Areas of well drained Copake soils are included where limestone dominates the rock fragments in the soil. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of the unit.

Important soil properties of the Hoosic soils—

Parent Material: glacial outwash
Permeability: rapid and moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil Reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is used as urban and suburban development. The open areas are used for lawns, gardens, and woodland or brushland between structures.

This soil has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This soil has few limitations for local roads and streets.

This soil has few limitations for trails. Small stones are the main limitation if this unit is used for camping and picnic areas and playgrounds. Adding sandy fill will cover small stones.

A capability subclass is not assigned for this unit.

HuB—Hoosic-Urban land complex, undulating

This unit is very deep and somewhat excessively drained. It is on valley floors and outwash plains. This unit consists of about 40 percent Hoosic soils, 35 percent urban land, and 25 percent other soils. The Hoosic soils and urban land are in such an intricate pattern that they were not mapped separately. Areas are irregularly shaped or rectangular. They commonly range from 5 to 75 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of Hoosic soils are as follows—

Surface layer:
Surface to 9 inches, dark brown gravelly loam

Subsoil:
9 to 15 inches, yellowish brown gravelly loam
15 to 24 inches, yellowish brown very gravelly sandy loam

24 to 31 inches, yellowish brown and dark yellowish brown very gravelly loamy sand

Substratum:
31 to 70 inches, dark brown extremely gravelly loamy sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are small areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Knickerbocker soils and well drained Haven soils are included in transitional areas approaching finer textured soils. Small areas of well drained Copake soils are included where limestone dominates the rock fragments in the soil. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of the unit.

Important soil properties of the Hoosic soils—

Parent Material: glacial outwash
Permeability: rapid and moderately rapid in the surface layer and subsoil, very rapid in the substratum
Available Water Capacity: low
Soil reaction: very strongly acid or strongly acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are used for lawns, gardens, and woodland or brushland between structures.

This soil has few limitations for dwellings with basements. Droughtiness can make establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This soil has few limitations for local roads and streets.

This soil has few limitations for trails. Small stones are the main limitation if this unit is used for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. Adding sandy fill will cover small stones. Grading will reduce the slope limitation.

A capability subclass is not assigned for this unit.

HvB—Hudson and Vergennes soils, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, moderately well drained soils that formed in lacustrine deposits. It is on broad lowlands near the Hudson River. Some areas consist mostly of Hudson soils, some of mostly Vergennes soils, and some of both. This unit consists of 40 percent Hudson soils, 40 percent Vergennes soils, and 20 percent other soils. Areas are irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Hudson soils are as follows—

Surface:
Surface to 9 inches, dark brown silt loam

Subsurface:
9 to 12 inches, brown silt loam

Subsoil:
12 to 25 inches, yellowish brown silty clay loam
25 to 34 inches, olive brown silt loam and silty clay loam

Substratum:
34 to 60 inches, olive brown, reddish brown and brown silt loam and silty clay loam

The typical sequence, depth, and composition of the layers of Vergennes soils are as follows—

Surface layer:
Surface to 6 inches, brown silty clay loam

Subsurface layer:
6 to 11 inches, light olive brown silty clay and light brownish gray silt loam

Subsoil:
11 to 20 inches, grayish brown clay
20 to 28 inches, light olive brown clay with mottles
28 to 37 inches, light olive brown clay and yellowish brown silt

Substratum:
37 to 80 inches, grayish brown and brown clay varves, interbedded with thin varves of yellowish brown silt

Included with this unit in mapping are areas of somewhat poorly drained Kingsbury and Rhinebeck soils in slightly lower areas. Also included are small areas of very poorly drained Livingston soils in depressions and along drainageways. Inclusions make up about 20 percent of the unit.

Important soil properties of the Hudson soils—

Parent Material: lacustrine deposits
Permeability: moderately slow and moderate in the surface layer and subsurface, slow and very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsurface, moderately acid to mildly alkaline in the subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Nov-Apr)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Vergennes soils—

Parent Material: lacustrine deposits
Permeability: slow or moderately slow in the surface layer and subsurface, slow or very slow in the subsoil, very slow in the substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to neutral in the surface and upper subsoil, moderately acid to mildly alkaline in the lower subsoil, moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: 1.0 to 3.0 feet (Dec-May)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for cultivated cropland or pastureland. Other areas are used for woodland or residential development.

This soil is well suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. The seasonal high water table and slow permeability cause the soil to warm very slowly in the spring and make tillage difficult. Tillage while the soil is wet will damage soil structure and result in a hard cloddy seedbed and a crusty surface when the soil dries. Surface drainage will help reduce problems related to wetness. Stripcropping, cross slope tillage, conservation tillage, cover crops, and crop rotations will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time. Sod buffer strips adjacent to steeply sloping areas will help control erosion.

This soil is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of northern red oak is moderately high or moderate. Clayey texture and the seasonal high water table restrict the use of equipment. Harvesting when the soil is frozen will reduce equipment damage to the soil.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Locating dwellings in the highest part of the unit, footing or foundation drains backfilled with gravel to a suitable outlet, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

The seasonal high water table and slow permeability are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill usually will allow onsite sewage disposal in many places.

Low bearing strength and frost action are the main limitations for local roads and streets. Providing a coarse grained subgrade will reduce these limitations.

The seasonal high water table and slow percolation are the main limitations if this unit is used for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. High erodibility is the main limitation for trails. Surface drainage, diverting runoff from higher areas, adding fill, and grading will reduce the limitations for camping and picnic areas and playgrounds. Switchbacks and water bars will reduce the risk of erosion on trails. A more suitable site for allof these uses should be considered on a coarser textured soil.

The capability subclass is IIe.

HvC—Hudson and Vergennes soils, 8 to 15 percent slopes

This soil unit consists of very deep, sloping, moderately well drained soils that formed in lacustrine deposits. It is on small hills and side slopes, near the Hudson River. Some areas consist mostly of Hudson soils, some of mostly Vergennes soils, and some of both. This unit consists of 40 percent Hudson soils, 40 percent Vergennes soils, and 20 percent other soils. Areas are irregularly shaped. They commonly range from 5 to 75 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Hudson soils are as follows—

Surface:
Surface to 9 inches, dark brown silt loam

Subsurface:
9 to 12 inches, brown silt loam

Subsoil:
12 to 25 inches, yellowish brown silty clay loam
25 to 34 inches, olive brown silt loam and silty clay loam

Substratum:
34 to 60 inches, olive brown, reddish brown and brown silt loam and silty clay loam

The typical sequence, depth, and composition of the layers of Vergennes soils are as follows—

Surface layer:
Surface to 6 inches, brown silty clay loam

Subsurface layer:
6 to 11 inches, light olive brown silty clay and light brownish gray silt loam

Subsoil:
11 to 20 inches, grayish brown clay
20 to 28 inches, light olive brown clay with mottles
28 to 37 inches, light olive brown clay and yellowish brown silt

Substratum:
37 to 80 inches, grayish brown and brown clay varves interbedded with thin varves of yellowish brown silt

Included with this unit in mapping are areas of somewhat poorly drained Kingsbury and Rhinebeck soils in slightly lower areas. Small areas of very poorly drained Livingston soils are included in depressions and along drainageways. Also included are soils that contain slightly less clay. Inclusions make up about 20 percent of the unit.

Important soil properties of the Hudson soils—

Parent Material: lacustrine deposits
Permeability: moderately slow or moderate in the surface layer and subsurface, slow or very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsurface, moderately acid to mildly alkaline in the subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Nov-Apr)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Vergennes soils—

Parent Material: lacustrine deposits
Permeability: slow or moderately slow in the surface layer and subsurface, slow or very slow in the subsoil, very slow in the substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to neutral in the surface and upper subsoil, moderately acid to mildly alkaline in the lower subsoil, moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: 1.0 to 3.0 feet (Dec-May)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for cultivated cropland or pastureland. Other areas are in woodland or residential development.

This soil is moderately suited to cultivated crops. Erosion is a severe hazard, particularly on areas left bare of plant cover. The seasonal high water table and slow permeability cause the soil to warm very slowly in the spring and make tillage difficult. Tillage while the soil is wet will damage soil structure and result in a hard cloddy seedbed and a crusty surface when the soil dries. Surface drainage will help reduce problems related to wetness. Stripcropping, cross slope tillage, conservation tillage, cover crops, and crop rotations will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time. Sod buffer strips adjacent to steeply sloping areas will help control erosion.

This soil is well suited to pasture. Erosion is a

severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of northern red oak is moderately high to moderate. Clayey texture and seasonal high water table restrict the use of equipment. Harvesting when the soil is frozen will reduce equipment damage to the soil. Logging trails laid out across slopes reduce the risk of erosion.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Locating dwellings in the highest part of the unit, footing or foundation drains backfilled with gravel to a suitable outlet, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

The seasonal high water table and slow permeability are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and adding fill will allow onsite sewage disposal in many places.

Low bearing strength and frost action are the main limitations if this unit is used for local roads and streets. Providing a coarse grained subgrade will reduce these limitations.

The seasonal high water table and slow percolation are the main limitations if this unit is used for camping and picnic areas and playgrounds. Slope is also a limitation for playgrounds. High erodibility is the main limitation if this unit is used for trails. Surface drainage, diverting runoff from higher areas, adding fill, and grading will reduce the limitations for camping and picnic areas and playgrounds. Switchbacks, log steps, and water bars will reduce the risk of erosion on trails. A more suitable site for all of these uses should be considered on a coarser textured soil.

The capability subclass is IIIe.

HvD—Hudson and Vergennes soils, hilly

This unit consists of very deep, moderately steep moderately well drained soils that formed in lacustrine deposits. It is on hills and side slopes, near the Hudson River. Some areas consist mostly of Hudson soils, some of mostly Vergennes soils, and some of both. This unit consists of 40 percent Hudson soils, 40 percent Vergennes soils, and 20 percent other soils. Areas are elongated or irregularly shaped. They commonly range from 5 to 600 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Hudson soils are as follows—

Surface:
Surface to 9 inches, dark brown silt loam

Subsurface:
9 to 12 inches, brown silt loam

Subsoil:
12 to 25 inches, yellowish brown silty clay loam
25 to 34 inches, olive brown silt loam and silty clay loam

Substratum:
34 to 60 inches, olive brown, reddish brown and brown silt loam and silty clay loam

The typical sequence, depth, and composition of the layers of Vergennes soils are as follows—

Surface layer:
Surface to 6 inches, brown silty clay loam

Subsurface layer:
6 to 11 inches, light olive brown silty clay and light brownish gray silt loam

Subsoil:
11 to 20 inches, grayish brown clay
20 to 28 inches, light olive brown clay with mottles
28 to 37 inches, light olive brown clay and yellowish brown silt

Substratum:
37 to 80 inches, grayish brown and brown clay varves interbedded with thin varves of yellowish brown silt

Included with this unit in mapping are areas of somewhat poorly drained Kingsbury and Rhinebeck soils in slightly lower areas. Small areas of very poorly drained Livingston soils are included in depressions and along drainageways. Also included are soils that contain slightly less clay. Inclusions make up about 20 percent of the unit.

Important soil properties of the Hudson soils—

Parent Material: lacustrine deposits
Permeability: Moderately slow and moderate in the surface layer and subsurface, slow and very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsurface, moderately acid to mildly alkaline

in the subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Nov-Apr)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Vergennes soils—

Parent Material: lacustrine deposits
Permeability: slow or moderately slow in the surface layer and subsurface, slow or very slow in the subsoil, very slow in the substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to neutral in the surface and upper subsoil, moderately acid to mildly alkaline in the lower subsoil, moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: 1.0 to 3.0 feet (Dec-May)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for pastureland or woodland. Other areas are used cultivated cropland or residential development.

This soil is poorly suited to cultivated crops. Erosion is a very severe hazard, particularly on areas left bare of plant cover. The seasonal high water table and slow permeability cause the soil to warm very slowly in the spring and make tillage difficult. Tillage while the soil is wet will damage soil structure and result in a hard cloddy seedbed and a crusty surface when the soil dries. Surface drainage will help reduce problems related to wetness. Stripcropping, cross slope tillage, conservation tillage, cover crops, and crop rotations will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture. Erosion is a very severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of northern red oak is moderately high or moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Clayey texture and seasonal high water table restrict the use of equipment. Harvesting when the soil is frozen will reduce equipment damage to the soil. Moderately steep slopes limit the safe operation of equipment. Logging trails, with water bars, laid out across slopes reduce the risk of erosion.

The seasonal high water table and slope are the main limitations if this unit is used for dwellings with basements. Erosion is a very severe hazard during construction. Locating dwellings in the highest part of the unit, footing or foundation drains backfilled with gravel to a suitable outlet, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

The seasonal high water table, low permeability, and slope are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines, placing the lines on the contour, and adding fill will allow onsite sewage disposal in places. A more suitable site should be considered in a less sloping inclusion or nearby soil with faster percolation.

Low bearing strength, frost action, and slope are the main limitations if this unit is used for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will improve bearing strength and reduce frost action.

High erodibility is the main limitation if this unit is used for trails. Slope is also a limitation. Switchbacks, log steps, and water bars will reduce these limitations. A more suitable site should be considered on a coarser textured soil.

The capability subclass is IVe.

HvE—Hudson and Vergennes soils, steep

This unit consists of very deep, moderately well drained soils that formed in lacustrine deposits. It is on hills and side slopes, mainly near the Hudson River. Some areas consist mostly of Hudson soils, some of mostly Vergennes soils, and some of both. This unit consists of 45 percent Hudson soils, 45 percent Vergennes soils, and 10 percent other soils. Areas are elongated or irregularly shaped. They commonly range from 5 to 500 acres. Slopes are complex and range from 25 to 45 percent.

The typical sequence, depth, and composition of the layers of the Hudson soil are as follows—

Surface:
Surface to 9 inches, dark brown silt loam

Subsurface:
9 to 12 inches, brown silt loam

Subsoil:
12 to 25 inches, yellowish brown silty clay loam
25 to 34 inches, olive brown silt loam and silty clay loam

Substratum:
34 to 60 inches, olive brown, reddish brown and brown silt loam and silty clay loam

The typical sequence, depth, and composition of the layers of the Vergennes soil are as follows—

Surface layer:
Surface to 6 inches, brown silty clay loam

Subsurface layer:
6 to 11 inches, light olive brown silty clay and light brownish gray silt loam

Subsoil:
11 to 20 inches, grayish brown clay
20 to 28 inches, light olive brown clay with mottles
28 to 37 inches, light olive brown clay and yellowish brown silt

Substratum:
37 to 80 inches, grayish brown and brown clay varves interbedded with thin varves of yellowish brown silt

Included with this unit in mapping are areas of somewhat poorly drained Kingsbury and Rhinebeck soils in slightly lower areas. Small areas of very poorly drained Livingston soils are included along drainageways. Also included are soils that contain slightly less clay. Inclusions make up about 10 percent of the unit.

Important soil properties of the Hudson soils—

Parent Material: lacustrine deposits
Permeability: moderately slow and moderate in the surface layer and subsurface, slow and very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsurface, moderately acid to mildly alkaline in the subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: perched at 1.5 to 2.0 feet (Nov-Apr)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Vergennes soils—

Parent Material: lacustrine deposits
Permeability: slow and moderately slow in the surface layer and subsurface, slow or very slow in the subsoil, very slow in the substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to neutral in the surface and upper subsoil, moderately acid to mildly alkaline in the lower subsoil, moderately alkaline in the substratum
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: 1.0 to 3.0 feet (Dec-May)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This soil is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity of northern red oak is moderately high or moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. The clayey texture and seasonal high water table restrict the use of equipment. Harvesting when the soil is frozen will reduce equipment damage to the soil. Steep slopes severely limit the safe operation of equipment. Logging trails, with water bars, laid out across slopes reduce the risk of erosion.

Steep slope and the seasonal high water table are the main limitations if this unit is used for septic tank absorption fields or dwellings with basements. Slow permeability is also a limitation for septic tank absorption fields. Erosion is a very severe hazard during construction. A more suitable site for these uses should be selected on a less sloping inclusion or nearby soil.

Steep slope, low bearing strength, and frost action are the main limitations if this unit is used for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will improve bearing strength and reduce frost action.

Steep slope and high erodibility are the main limitations if this unit is used for trails. Switchbacks, log steps, and water bars will reduce these limitations. A more suitable site should be selected on a coarser textured soil.

The capability subclass is VIe.

Hy—Hydraquents and Medisaprists soils, ponded

This unit consists of very deep, nearly level, very poorly drained soils. It is on tidal influenced land near the Hudson River and is subject to daily flooding. Some areas consist of mostly Hydraquents, some of mostly Medisaprists, and some of both. This unit consists of 45 percent Hydraquents, 45 percent Medisaprists, and 10 percent other soils. Areas are irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth and range from 0 to 1 percent.

The sequence, depth, and composition of the layers of Hydraquents are variable, but the range is as follows—

Surface layer:
Color: Black, dark gray, very dark brown
Thickness: 4 to 15 inches
Texture: Muck, silt loam, loam, silty clay loam, or sandy loam with 0 to 35 percent rock fragments

Substratum:
Color: Gray, olive gray, dark grayish brown
Thickness: 35 to 65 inches
Texture: Silty clay through loamy fine sand with 0 to 35 percent rock fragments

The sequence, depth, and composition of layers of Medisaprists are variable, but the range is as follows—

Surface organic layer:
Color: Black, very dark grayish brown, dark olive gray
Thickness: 16 inches or greater
Texture: Muck

Underlying mineral layer:
Texture: silty clay through gravelly loamy sand or bedrock in lower part

Included with this unit in mapping are areas of somewhat excessively drained or well drained Udorthents and moderately well drained Udorthents, wet substratum near roads and railroads. Soils with sulfuric horizons or sulfidic materials deeper than 40 inches are included in some areas. Also included are areas where bedrock is less than 60 inches deep. Inclusions make up about 10 percent of the unit.

Important soil properties of the Hydraquents—

Parent Material: recent alluvium
Permeability: variable
Available Water Capacity: high
Soil Reaction: variable
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: +3.0 to 1.0 feet
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: daily

Important soil properties of Medisaprists—

Parent Material: organic matter
Permeability: moderately slow to moderately rapid
Available Water Capacity: high
Soil Reaction: variable
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: +5.0 to 0.5 feet
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: daily

Most areas of this unit are in water tolerant bushes or grasses.

This unit is unsuited to cultivated crops and pasture because of wetness and daily flooding. Most areas of this unit will not support grazing animals.

The seasonal high water table and daily flooding are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, and local roads and streets. Low bearing strength is also a limitation. A more suitable site, such as a drier soil that does not flood, should be selected for all of these uses.

This unit has good potential for wetland wildlife habitat. The capability subclass is Vw.

Kn—Kingsbury and Rhinebeck soils

This unit consists of very deep, nearly level, somewhat poorly drained soils that formed in lacustrine deposits. It is on broad flat lands, mostly near the Hudson River in the northwestern part of the county. Some areas consist of mostly Kingsbury soils, some of mostly Rhinebeck soils, and some of both. This unit consists of 40 percent Kingsbury soils, 40 percent Rhinebeck soils, and 20 percent other soils. Areas are elongated or irregularly shaped. They commonly range from 5 to 250 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Kingsbury soils are as follows—

Surface layer:
Surface to 9 inches, dark grayish brown silty clay loam

Subsurface layer:
9 to 14 inches, mottled light brownish gray silty clay loam

Subsoil:
14 to 29 inches, mottled olive clay
29 to 38 inches, olive clay

Substratum:
38 to 72 inches, mottled olive layers of silty clay loam with thin varves of silt loam

The typical sequence, depth, and composition of the layers of Rhinebeck soils are as follows—

Surface layer:
Surface to 9 inches, dark grayish brown silt loam

Subsurface layer:
9 to 15 inches, gray silty clay loam with mottles

Subsoil:
15 to 31 inches, light olive brown silty clay loam with mottles

Substratum:
31 to 72 inches, brown silt loam with gray streaks

Included with this unit in mapping are areas of very poorly drained Livingston soils and poorly drained and very poorly drained Canandaigua soils in depressions and along drainageways. Moderately well drained Hudson and Vergennes soils are included on slightly higher areas. Also included are areas with slopes up to 6 percent and areas of less clayey Raynham soils. Inclusions make up about 20 percent of this unit.

Important soil properties of the Kingsbury soils—

Parent Material: lacustrine deposits
Permeability: slow in the surface layer and subsurface, very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to mildly alkaline in the surface, subsurface, and subsoil, mildly alkaline to strongly alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 0.5 to 1.5 feet (Dec-May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Rhinebeck soils—

Parent Material: lacustrine deposits
Permeability: moderately slow in the surface layer, very slow and slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, strongly acid to mildly alkaline in the subsoil, slightly acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 0.5 to 1.5 feet (Jan-May)
Rooting Zone: restricted by the high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for pastureland, woodland, or brushland. Other areas are used for cultivated cropland or residential development.

This unit is moderately suited to cultivated crops. The seasonal high water table and slow permeability cause the soil to warm very slowly in the spring and makes tillage difficult. Tillage while the soil is wet will damage soil structure and result in a hard cloddy seedbed and crusty surface when the soil dries. Surface drainage will help reduce problems related to wetness. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is moderately suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of northern red oak is moderately high. Windthrow hazard is moderate because the seasonal high water table restricts rooting depth. The clayey texture and seasonal high water table restrict the use of equipment. Harvesting when the soil is frozen will reduce equipment damage to the soil.

The seasonal high water table and high shrink-swell potential are the main limitations if this unit is used for dwellings with basements. Locating dwellings in the highest part of the unit with footing or foundation drains backfilled with gravel to a suitable outlet, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness and shrink-swell. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic

tank absorption fields. A more suitable site should be selected in a drier, coarser textured inclusion or nearby soil.

Low bearing strength, the seasonal high water table, and frost action are the main limitations if this unit is used for local roads and streets. Installing drainage and providing a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table and slow percolation are the main limitations if this unit is used for camping and picnic areas, playgrounds, and trails. A more suitable site should be found for all of these uses.

The capability subclass is IIIw.

KrA—Knickerbocker fine sandy loam, nearly level

This unit consists of very deep and somewhat excessively drained Knickerbocker soils that formed in glacial ouwash deposits. It is on valley floors and outwash plains. Areas are irregularly shaped. They commonly range from 5 to 125 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown loamy sand
60 to 72 inches, dark brown loamy sand

Included with this soil in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Areas of Hoosic soils that contain more gravel are included. Also included are areas of well drained Haven soils which have a loamier surface and subsoil. Inclusions make up about 15 percent of the map unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This soil meets the criteria for prime farmland. Most areas are used for cultivated cropland or woodland. Other areas are used for pasture or residential development.

This soil is well suited to cultivated crops. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues will build up soil organic matter content, which increases the water-holding capacity. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture, but available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

This soil has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This soil has few limitations as sites for local roads and streets.

This soil has few limitations for camping and picnic areas or trails. Small stones are the main limitation if this unit is used for playgrounds. Adding sandy fill will cover small stones.

The capability subclass is IIs.

KrB—Knickerbocker fine sandy loam, undulating

This soil consists of very deep and somewhat excessively drained Knickerbocker soils that formed in glacial outwash deposits. It is on valley floors and

outwash plains. Areas are oval or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown loamy sand
60 to 72 inches, dark brown loamy sand

Included with this soil in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Hoosic soils are included in areas that contain more gravel. Also included are areas of well drained Haven soils which have a loamier surface and subsoil. Inclusions make up about 15 percent of the map unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This soil meets the criteria for prime farmland. Most areas are used for cultivated cropland or woodland. Other areas are used for pasture or residential development.

This soil is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues will build up soil organic matter content, which increases the water-holding capacity. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture, but available moisture for forage is usually limiting. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

This soil has few limitations for dwellings with basements. Droughtiness can make the establishment and maintenance of lawns difficult. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This soil has few limitations if used as a site for local roads and streets.

This soil has few limitations for camping and picnic areas or trails. Slope and small stones are the main limitations if this unit is used for playgrounds. Grading and will cover small stones.

The capability subclass is IIs.

KrC—Knickerbocker fine sandy loam, rolling

This soil consists of very deep and somewhat excessively drained Knickerbocker soils that formed in glacial outwash deposits. It is on valley sides and small hills. Areas are oval or irregularly shaped. They commonly range from 5 to 125 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown loamy sand
60 to 72 inches, dark brown loamy sand

Included with this soil in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained

Halsey soils along drainageways and in depressions. Also included are areas of Hoosic soils that contain more gravel. Inclusions make up about 15 percent of the map unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for cultivated cropland or woodland. Other areas are used for pasture or residential development.

This soil is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. In the absence of irrigation, crop yields are severely reduced by moisture stress during the growing season. The application of manure and return of crop residues will build up soil organic matter content, which increases the water-holding capacity. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture, but available moisture for forage is usually limiting. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in the spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

Slope is the main limitation if this unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation.

This soil has few limitations for trails. Slope is the main limitation if this unit is used for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is IIIe.

KrD—Knickerbocker fine sandy loam, hilly

This soil consists of very deep and somewhat excessively drained Knickerbocker soils that formed in glacial outwash deposits. It is on valley sides, terrace faces, and hills. Areas are elongated or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown loamy sand
60 to 72 inches, dark brown loamy sand

Included with this soil in mapping are areas of somewhat poorly drained Fredon soils along drainageways and in depressions. Also included are areas of Hoosic soils which contain more gravel. Inclusions make up about 15 percent of the map unit.

Important soil properties—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches

Flooding Hazard: none

Most areas of this soil are used for cultivated cropland or woodland. Other areas are used for pasture or residential development.

This soil is unsuited to cultivated crops because of slope. Pasture is a better use, but the suitability is only poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Poor filtering and slope are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places. A more suitable site should be considered in a less sloping, less sandy inclusion or nearby soil.

Slope is the main limitation if this unit is used for local roads and streets. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

KuA—Knickerbocker - Urban land complex, nearly level

This unit consists of very deep, somewhat excessively drained Knickerbocker soils and urban land. It is on valley floors and outwash plains. This unit consists of about 40 percent Knickerbocker soils, 35 percent urban land, and 25 percent other soils. The Knickerbocker soils and urban land are in such an intricate pattern that they were not separated in mapping. Areas are rectangular or irregularly shaped. They commonly range from 5 to 450 acres. Slopes are complex and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of the Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown sand
60 to 72 inches, dark brown loamy sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Hoosic soils are included in areas that contain more gravel. Small areas of well drained Haven soils are included which have a loamier surface and subsoil. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of the unit.

Important soil properties of the Knickerbocker soils—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is used as urban and suburban development. The open areas are in lawns, gardens, and woodland or brushland between structures.

This unit has few limitations for dwellings with

basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This unit has few limitations for local roads and streets.

This unit has few limitations for camping and picnic areas or trails. Small stones are the main limitation for playgrounds. Adding sandy fill will reduce these limitations.

A capability subclass is not assigned to this unit.

KuB—Knickerbocker-Urban land complex, undulating

This unit consists of very deep, somewhat excessively drained Knickerbocker soils and urban land. It is on valley floors and outwash plains. This unit consists of about 40 percent Knickerbocker soils, 35 percent urban land, and 25 percent other soils. The Knickerbocker soils and urban land are in such an intricate pattern that they were not separated in mapping. Areas are oval, rectangular, or irregularly shaped. They commonly range from 5 to 60 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of the Knickerbocker soils are as follows—

Surface layer:
Surface to 10 inches, dark brown fine sandy loam

Subsoil:
10 to 19 inches, yellowish brown sandy loam
19 to 30 inches, dark yellowish brown loamy sand

Substratum:
30 to 60 inches, dark yellowish brown loamy sand
60 to 72 inches, dark brown loamy sand

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of somewhat poorly drained Fredon soils in slightly lower areas and poorly drained and very poorly drained Halsey soils along drainageways and in depressions. Hoosic soils are included in areas that contain more gravel. Small areas of well drained Haven soils are included which have a loamier surface and subsoil. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of the unit.

Important soil properties of the Knickerbocker soils—

Parent Material: glacial outwash
Permeability: moderately rapid in the surface layer and upper subsoil, rapid or very rapid in the lower subsoil and substratum
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are in lawns, gardens, and woodland or brushland between structures.

This soil has few limitations for dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Poor filtering is the main limitation if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because the rapidly permeable substratum does not adequately filter effluent. Specially designed septic systems are necessary in places.

This soil has few limitations for local roads and streets.

This soil has few limitations for camping and picnic areas or trails. Slope and small stones are the main limitations if this unit is used for playgrounds. Grading and adding sandy fill will reduce these limitations.

A capability subclass is not assigned to this unit.

Ln—Linlithgo silt loam

This unit consists of very deep, nearly level, and somewhat poorly drained Linlithgo soils that formed in alluvium deposits. It is on flood plains. Areas are elongated or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Linlithgo soils are as follows—

Surface layer:
Surface to 9 inches, dark brown silt loam

Subsoil:
9 to 14 inches, pale brown silt loam with mottles

14 to 21 inches, light brownish gray silt loam with mottles

Substratum:
21 to 26 inches, gray loamy sand
26 to 72 inches, grayish brown gravelly loamy fine sand with mottles

Included with this soil in mapping are areas of well drained Wappinger soils, moderately well drained Pawling soils, and poorly drained and very poorly drained Wayland soils. Wappinger and Pawling soils are on slightly higher convex portions of the floodplains. Wayland soils are in depressions and swales. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: recent alluvium
Permeability: moderate in the surface layer and subsoil, moderately rapid to very rapid in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to slightly acid in the surface and subsoil, moderately acid to neutral in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 0.5 to 1.5 feet (Jan-May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: occasional, brief (Nov-May)

Where drained, this soil meets the criteria for prime farmland. Most areas are used for cropland, pastureland, or woodland.

This soil is moderately suited to cultivated crops. Where drained, this soil is well suited to cultivated crops. Flooding may briefly delay planting early in spring. Using cover crops and including sod crops in the cropping system help to maintain good soil tilth and protect the soil during periods of flooding. Planting trees along the streambank will help reduce streambank erosion.

This soil is moderately suited to pasture. Where drained, this soil is well suited to pasture. Tile drains covered with filter material work well. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Seedling mortality is high and windthrow hazard is severe because of the seasonal high water table and flooding. Wetness severely limits the operation of equipment.

Flooding and the seasonal high water table are the main limitations if this unit is used for dwellings with basements. A more suitable site should be selected on a drier soil that does not flood.

Flooding, the seasonal high water table, and poor filtering are the main limitations if this unit is used for septic tank absorption fields. There is a severe hazard of groundwater and stream water pollution because of the seasonal high water table. Also, flooding and the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a drier, less permeable soil that does not flood.

Flooding, the seasonal high water table, and frost action are the main limitations if this unit is used for local roads and streets. Providing drainage and building on raised fill with a coarse-grained subgrade to frost depth will reduce these limitations. A more suitable site should be considered on a drier soil that does not flood.

The seasonal high water table and flooding are the main limitations if this unit is used for camping and picnic areas, playgrounds, and trails. A more suitable site should be selected on a drier soil that does not flood.

The capability subclass is IIIw.

Lv—Livingston silty clay loam

This unit consists of very deep, nearly level, and very poorly drained Livingston soils that formed in lacustrine deposits. It is in depressions and along drainageways. Areas are elongated, oval, or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Livingston soils are as follows—

Surface layer:
Surface to 8 inches, very dark gray silty clay loam

Subsoil:
8 to 30 inches, gray clay with mottles
30 to 38 inches, gray clay with mottles

Substratum:
38 to 72 inches, olive gray clay with mottles

Included with this soil in mapping are areas of somewhat poorly drained Kingsbury and Rhinebeck soils on slightly higher areas. Small areas of poorly drained and very poorly drained Canandaigua soils are included where the soil contains slightly less clay. Also included are areas of somewhat poorly drained Raynham soils on slightly higher areas with coarser

texture. Included areas make up about 15 percent of the unit.

Important soil properties—

Parent Material: lacustrine deposits
Permeability: moderately slow in the surface layer, slow or very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and upper subsoil, neutral to moderately alkaline in the lower subsoil and substratum
Surface Runoff: very slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 0 to 1.0 feet (Sept-July)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for woodland or water tolerant bushes or grasses.

This soil is unsuited to cultivated crops and pasture because of the prolonged seasonal high water table and ponding.

The potential productivity of this soil for red maple is moderate. Seedling mortality is high because of the seasonal high water table. Windthrow hazard is severe because the seasonal high water table restricts root growth. Wetness severely limits the operation of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. High shrink-swell potential is also a limitation for dwellings with basements. Slow percolation is also a limitation for septic tank absorption fields. Low bearing strength and frost action are also limitations for local roads and streets. A more suitable site should be selected for all of these uses on a drier, coarser textured inclusion or nearby soil.

This soil has fair potential for wetland wildlife habitat.

The capability subclass is Vw.

McC—Macomber-Taconic complex, rolling, very rocky

This unit consists of moderately deep, well drained Macomber soils and shallow, somewhat excessively drained Taconic soils that formed in glacial till deposits. It is on mountaintops and side slopes that are underlain by folded phyllite, schist, slate, or quartzite bedrock. It is in mountainous areas in the northeastern part of the county where the mean annual soil temperature is less than 47 degrees Fahrenheit. This map unit consists of about 40 percent Macomber soils, 40 percent Taconic soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Macomber and Taconic soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are oval or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Macomber soils are as follows—

Surface layer:
Surface to 4 inches, black channery silt loam

Subsoil:
4 to 24 inches, dark yellowish brown very channery loam and extremely channery loam

Bedrock:
24 inches, folded schist bedrock

The typical sequence, depth, and composition of the layers of Taconic soils are as follows—

Surface layer:
0 to 3 inches, black channery silt loam

Subsoil:
3 to 12 inches, yellowish brown very channery silt loam

Bedrock:
12 inches, folded phyllite and quartzite bedrock

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of soils where the underlying bedrock is deeper than 40 inches. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Macomber soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Important soil properties of the Taconic soils—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low

Soil Reaction: very strongly acid or strongly acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

All areas of this unit are in woodland.

This unit is unsuited to cultivated crops because of the depth to bedrock, rock outcroppings over portions of the unit, and short growing season. Pasture is a better use, but the suitability is only poor. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Rock outcroppings and uneven slopes restrict operating equipment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during the short growing season, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate in areas of Taconic soils because of droughtiness and windthrow is severe because of shallow depth to bedrock. Planting early in spring will reduce the impact of summer droughtiness and reduce seedling mortality. Logging trails laid out across the slope reduce the risk of erosion.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper inclusion or nearby soil.

Shallow depth to bedrock in areas of Taconic soils and rock outcrops over portions of the unit are the main limitations if this unit is used for local roads and streets. Slope and frost action are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

This soil does not have limitations for trails. Shallow depth to bedrock in areas of Taconic soils and rock outcroppings over portions of the unit are the main limitations for camping and picnic areas and playgrounds. Slope and small stones are also limitations for playgrounds. Grading and adding sandy fill will reduce these limitations.

The capability subclass is VIs.

MnA—Massena silt loam, 0 to 3 percent slopes

This unit consists of very deep, nearly level, and somewhat poorly drained Massena soils that formed in glacial till deposits. It is in depressions and along drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Massena soils are as follows—

Surface layer:
Surface to 7 inches, dark grayish brown silt loam

Subsoil:
7 to 14 inches, yellowish brown loam with mottles
14 to 19 inches, grayish brown fine sandy loam with mottles
19 to 33 inches, grayish brown loam with mottles

Substratum:
33 to 47 inches, dark grayish brown fine sandy loam with mottles
47 to 72 inches, grayish brown fine sandy loam with mottles

Included with this soil in mapping are areas of moderately well drained Georgia soils and poorly drained and very poorly drained Sun soils. Georgia soils are in slightly higher areas and Sun soils are in depressions. Also included are areas of Punsit soils where the substratum is denser. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer, moderately slow or slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: moderately acid to neutral in the surface and subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 1.0 to 1.5 feet (Nov -May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches

Flooding Hazard: none

Where drained, this soil meets the criteria for prime farmland. Most areas are used for cultivated cropland, woodland, or brushland. Other areas are used for pasture or residential development.

This soil is moderately suited to cultivated crops. Where drained, this soil is well suited to cultivated crops. Tile drains covered with filter material work well, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is moderately suited to pasture. Where drained, this soil is well suited to pasture. Tile drains covered with filter material work well, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Seedling mortality and windthrow hazard are moderate because of the seasonal high water table. Wetness limits the use of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Building dwellings with raised foundations, subsurface drainage, footing or foundation drains, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce the wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table. Adding fill and installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness. Modifying a conventional system by extending the length of the distribution lines will reduce the slow percolation limitation. A more suitable site should be considered in a drier soil that has faster percolation.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Providing a drainage system and a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Subsurface drainage and diverting runoff from higher areas will reduce these limitations.

The capability subclass is IIIw.

MnB—Massena silt loam, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, and somewhat poorly drained soils that formed in glacial till deposits. It is on concave foot slopes and along drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Massena soils are as follows—

Surface layer:
Surface to 7 inches, dark grayish brown silt loam

Subsoil:
7 to 14 inches, yellowish brown loam with mottles
14 to 19 inches, grayish brown fine sandy loam with mottles
19 to 33 inches, grayish brown loam with mottles

Substratum:
33 to 47 inches, dark grayish brown fine sandy loam with mottles
47 to 72 inches, grayish brown fine sandy loam with mottles

Included in mapping are areas of moderately well drained Georgia soils and poorly drained and very poorly drained Sun soils. Georgia soils are in slightly higher areas and Sun soils are in depressions and along drainageways. Also included are areas of Punsit soils where the substratum is denser. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer, moderately slow and slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: moderately acid to neutral in the surface and subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate

Depth to Seasonal High Water Table: 1.0 to 1.5 feet (Nov -May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Where drained, this soil meets the criteria for prime farmland. Most areas are used for cultivated cropland, woodland, or brushland. Other areas are used for pasture or residential development.

This soil is moderately suited to cultivated crops. Where drained, this soil is well suited to cultivated crops. Erosion is a hazard, particularly on areas left bare of plant cover. Tile drains covered with filter material work well, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth and maintain soil productivity over an extended period of time.

This soil is moderately suited to pasture. Where drained, this soil is well suited to pasture. Tile drains covered with filter material work well, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Seedling mortality and windthrow hazard are moderate because of the seasonal high water table. Wetness limits the use of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Building dwellings with raised foundations, subsurface drainage, footing or foundation drains, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce the wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. There is a hazard of groundwater pollution because of the seasonal high water table. Adding fill and installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness. Modifying a conventional system by extending the length of the distribution lines will reduce the slow percolation limitation. A more suitable site should be considered in a drier soil that has faster percolation.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Providing a drainage system and a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Slope is also a limitation for playgrounds. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Grading will reduce the slope limitation.

The capability subclass is IIIw.

NwB—Nassau-Cardigan complex, undulating, very rocky

This unit consists of shallow, somewhat excessively drained Nassau soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hilltops and undulating till plains that are underlain by folded shale bedrock. Nassau soils are commonly on upper slopes, hilltops, and near areas of rock outcrop and Cardigan soils are commonly on lower concave slopes. This unit consists of about 40 percent Nassau soils, 40 percent Cardigan soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Nassau and Cardigan soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are oval or irregularly shaped. They commonly range from 5 to 400 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Nassau soils are as follows—

Surface:
Surface to 5 inches, dark grayish brown channery silt loam

Subsoil:
5 to 16 inches, yellowish brown very channery silt loam

Bedrock:
16 inches, folded dark gray shale

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam

20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included with this unit in mapping are areas of somewhat poorly drained Massena soils and poorly drained and very poorly drained Sun soils. Massena soils are in concave areas and Sun soils are in depressions and along drainageways. Well drained Dutchess soils are included where the underlying bedrock is deeper than 60 inches. Also included are small areas where the underlying bedrock is hard, dense graywacke. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Nassau soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Cardigan soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly through moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are in woodland or pastureland. Other areas are used as residential development.

This unit is unsuited to cultivated crops because of the shallow depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is only poor. Erosion may be a hazard, particularly on areas left bare during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock.

Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a moderate hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper inclusion or nearby soil.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing a coarse grained subgrade will reduce frost action.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations for camping and picnic areas and playgrounds. Slope and small stones are also limitations for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations. This soil has few limitations for trails.

The capability subclass is VIs.

NwC—Nassau-Cardigan complex, rolling, very rocky

This unit consists of shallow, somewhat excessively drained Nassau soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded shale bedrock. Nassau soils are commonly on upper slopes, hilltops, and near areas of rock outcrop and Cardigan soils are commonly on lower concave slopes. This unit consists of about 40 percent Nassau soils, 40 percent Cardigan soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Nassau and Cardigan soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are oval or irregularly shaped. They commonly range from 5 to 750 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Nassau soils are as follows—

Surface:
Surface to 5 inches, dark grayish brown channery silt loam

Subsoil:
5 to 16 inches, yellowish brown very channery silt loam

Bedrock:
16 inches, folded dark gray shale

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Inclusions of soils that are less than 10 inches to bedrock are common next to areas of rock outcrop. Areas of well drained Dutchess soils are included where the underlying bedrock is deeper than 60 inches. Also included are small areas where the underlying bedrock is hard, dense graywacke. Inclusions and rock outcrop make up about 30 percent of the unit.

Important soil properties of the Nassau soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Cardigan soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly acid to moderately acid
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland or pastureland. Other areas are used for residential development.

This unit is unsuited to cultivated crops because of the shallow depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is only poor. Erosion is a moderate hazard, particularly on areas left bare during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across slopes reduce the risk of erosion.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper inclusion or nearby soil.

Shallow depth to bedrock and rock outcroppings over portions of the unit are the main limitations if this unit is used for local roads and streets. Slope and frost action are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Shallow depth to bedrock, rock outcroppings, slope over portions of the unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations. This soil has few limitations for trails.

The capability subclass is VIs.

NwD-Nassau-Cardigan complex, hilly, very rocky

This unit consists of shallow, somewhat excessively drained Nassau soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. It is on hills and side slopes that are underlain by folded shale bedrock. Nassau soils are commonly on upper slopes and near areas of rock outcrop and Cardigan soils are commonly on lower concave slopes. This unit consists of about 45 percent Nassau soils, 30 percent Cardigan soils, and 25 percent other soils and rock outcrop. Rock outcrop covers 2 to 10 percent of the surface. The Nassau and Cardigan soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated or irregularly shaped. They commonly range from 5 to 2500 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Nassau soils are as follows—

Surface:
Surface to 5 inches, dark grayish brown channery silt loam

Subsoil:
5 to 16 inches, yellowish brown very channery silt loam

Bedrock:
16 inches, folded dark gray shale

The typical sequence, depth, and composition of the layers of Cardigan soils are as follows—

Surface layer:
Surface to 8 inches, dark brown channery silt loam

Subsoil:
8 to 12 inches, yellowish brown channery silt loam
12 to 20 inches, yellowish brown channery loam
20 to 30 inches, dark yellowish brown channery silt loam

Bedrock:
30 inches, folded shale bedrock

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils along drainageways and in depressions. Areas of well drained Dutchess soils are included where the underlying bedrock is deeper than 60 inches. Also included are small areas where the underlying bedrock is hard, dense graywacke. Inclusions and rock outcrop make up about 25 percent of the unit.

Important soil properties of the Nassau soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: very strongly acid and strongly acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Cardigan soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: low
Soil Reaction: very strongly to moderately acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of the shallow depth to bedrock and rock outcroppings over portions of the unit. Pasture is a better use, but the suitability is only poor. Erosion is a severe hazard, particularly on areas left bare during establishment. Rock outcroppings and uneven slopes restrict operating machinery. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing during dry periods, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity of this unit for northern red oak is moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of the shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging

trails, with water bars, laid out across slopes reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope, shallow depth to bedrock, and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. Dwellings can be built above the rock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover during construction will help control erosion and sedimentation. A more suitable site should be considered on a deeper less sloping inclusion or nearby soil.

Slope, shallow depth to bedrock, and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper, less sloping inclusion or nearby soil.

Slope, shallow depth to bedrock, and rock outcroppings over portions of the unit are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIs.

NxE—Nassau-Rock outcrop complex, steep

This unit consists of shallow, somewhat excessively drained Nassau soils and areas of rock outcrop. It is on hills and side slopes that are underlain by folded shale bedrock. This unit consists of about 45 percent Nassau soils, 30 percent rock outcrop, and 25 percent other soils. The Nassau soils and areas of rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated or irregularly shaped. They commonly range from 5 to 600 acres. Slopes are complex and range from 25 to 45 percent.

The typical sequence, depth, and composition of the layers of Nassau soils are as follows—

Surface:
Surface to 5 inches, dark grayish brown channery silt loam

Subsoil:
5 to 16 inches, yellowish brown very channery silt loam

Bedrock:
16 inches, folded dark gray shale

Typically, the rock outcrop consists of folded and tilted shale.

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Well drained Dutchess soils are included where the underlying bedrock is deeper than 60 inches and well drained Cardigan soils are included where the underlying bedrock is between 20 and 40 inches deep. Also included are small areas where the underlying bedrock is hard, dense graywacke. Inclusions make up about 25 percent of the unit.

Important soil properties of the Nassau soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of the steep slope, shallow depth to bedrock, and frequent rock outcroppings.

The potential productivity of this unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Steep slopes severely limit the safe operation of equipment.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements or septic tank absorption fields. A pollution hazard exists for septic tank absorption fields because the soil is not thick enough to filter effluent. A more suitable site for these uses should be selected on a deeper, less sloping inclusion or nearby soil.

Steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is

used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Steep slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

NxF—Nassau-Rock outcrop complex, very steep

This unit consists of shallow, somewhat excessively drained Nassau soils and areas of rock outcrop. It is on hills and side slopes that are underlain by folded shale bedrock. This unit consists of about 50 percent Nassau soils, 30 percent rock outcrop, and 20 percent other soils. The Nassau soils and areas of rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated or irregularly shaped. They commonly range from 5 to 500 acres. Slopes are complex and range from 45 to 70 percent.

The typical sequence, depth, and composition of the layers of Nassau soils are as follows—

Surface:
Surface to 5 inches, dark grayish brown channery silt loam

Subsoil:
5 to 16 inches, yellowish brown very channery silt loam

Bedrock:
16 inches, folded dark gray shale

Typically, the rock outcrop consists of folded and tilted shale.

Included with this unit in mapping are narrow areas of poorly drained and very poorly drained Sun soils along drainageways. Well drained Cardigan soils are included where the underlying bedrock is between 20 and 40 inches deep. Also included are small areas where the underlying bedrock is hard, dense graywacke. Inclusions make up about 20 percent of the unit.

Important soil properties of the Nassau soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of the very steep slope, shallow depth to bedrock, and frequent rock outcroppings.

The potential productivity of this unit for northern red oak is moderate. Erosion is a severe hazard and is accelerated where timber harvest damages the vegetative cover. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Very steep slopes limit the safe operation of equipment.

Steep slope and shallow depth to bedrock are the main limitations if this unit is used for dwellings with basements or septic tank absorption fields. A pollution hazard exists for septic tank absorption fields because the soil is not thick enough to filter effluent. A more suitable site should be selected in a deeper, less sloping inclusion or nearby soil.

Very steep slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Very steep slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

Pc—Palms muck

This soil consists of very deep, nearly level, and very poorly drained Palms soils that formed in organic deposits. It is in depressions between hills and on outwash, till, and flood plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are smooth and range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of Palms soils are as follows—

Surface layer:
Surface to 12 inches, black muck

Subsurface layers:
12 to 20 inches, black muck
20 to 30 inches, dark gray muck

Substratum:
30 to 80 inches, gray gravelly fine sandy loam

Included with this soil in mapping are areas of Carlisle soils where the organic material is greater than 51 inches deep. Areas of poorly drained and very poorly drained loamy Sun soils are included around the perimeter of the unit. Also included are areas of somewhat poorly drained to very poorly drained Fluvaquents and moderately well drained to somewhat excessively drained Udifluvents where fast flowing streams enter the unit. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: organic matter
Permeability: moderately slow to moderately rapid in the surface layer and subsurface, moderately slow or moderate in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to moderately alkaline
Surface Runoff: very slow or ponded
Erosion Hazard: slight
Depth to Seasonal High Water Table: +1.0 to 1.0 foot (Nov-May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for woodland or water tolerant bushes and grasses.

This soil is unsuited to cultivated crops and pasture because of the prolonged seasonal high water table and ponding.

Potential productivity of this soil for red maple is moderate. Seedling mortality is high because of the prolonged seasonal high water table. Windthrow hazard is severe because the seasonal high water table restricts root growth. Wetness and low bearing strength severely limit the use of equipment.

Ponding and subsidence are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Low bearing strength is also a limitation for dwellings with basements. Slow percolation is also a limitation for septic tank absorption fields. Frost action is also a limitation for local roads and streets. A more suitable site for all of these uses should be selected on a drier soil.

This soil has good potential for wetland wildlife habitat.

The capability subclass is Vw.

Pg—Pawling silt loam

This unit consists of very deep, nearly level, and moderately well drained Pawling soils that formed in alluvium deposits. It is on flood plains. Areas are elongated of irregularly shaped. They commonly range from 5 to 475 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Pawling soils are as follows—

Surface layer:
Surface to 8 inches, very dark grayish brown silt loam

Subsoil:
8 to 14 inches, dark brown silt loam
14 to 25 inches, dark brown silt loam with mottles
25 to 33 inches, dark brown loam with mottles

Substratum:
33 to 37 inches, grayish brown gravelly loamy sand
37 to 72 inches, brown very gravelly sand

Included in mapping are areas of well drained Wappinger soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Wappinger soils are on slightly higher convex areas. Linlithgo soils are on slightly lower areas. Wayland soils are in depressions and swales. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: recent alluvium
Permeability: moderate in the surface layer and subsoil, moderately rapid to rapid in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to moderately acid above 20 inches, moderately acid to neutral below 20 inches
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 1.5 to 2.0 feet (Feb-Apr)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: occasional, brief (Nov-May)

This soil meets the criteria for prime farmland. Most areas are used for cropland, pastureland, or woodland.

This soil is well suited to cultivated crops. Flooding can briefly delay planting early in spring. Using cover crops and including sod crops in the cropping system help to maintain good soil tilth and protect the soil

during periods of flooding. Planting trees along the streambank will help reduce streambank erosion.

This soil is well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Brief flooding restricts the operation of equipment.

Flooding and the seasonal high water table are the main limitations if this unit is used for dwellings with basements. A more suitable site should be selected on a drier soil that does not flood.

Flooding, the seasonal high water table, and poor filtering are the main limitations if this unit is used for septic tank absorption fields. There is a severe hazard of groundwater and stream water pollution because of the seasonal high water table and flooding. Also, the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected on a drier, less permeable soil that does not flood.

Flooding, the seasonal high water table, and frost action are the main limitations if this unit is used for local roads and streets. Providing drainage and building on raised fill with a coarse-grained subgrade to frost depth will reduce these limitations. A more suitable site should be considered on a drier soil that does not flood.

The seasonal high water table and flooding are the main limitations if this unit is used for camping and picnic areas, playgrounds, and trails. A more suitable site should be selected on a drier soil that does not flood.

The capability subclass is IIw.

Ps—Pits, gravel

This unit consists of areas that have been excavated for gravel. Areas are oval or irregularly shaped. They commonly range from 5 to 100 acres. These pits have undulating or rolling surfaces with steep or very steep slopes along the edges. Because of the variability of this unit, a typical pedon is not provided.

Included with this unit in mapping are areas of somewhat excessively drained Hoosic soils and well drained Copake soils where the overlying soil material is undisturbed. Areas of somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils are included in undisturbed depressions and along drainageways. Also included are areas of Udorthents where the overlying soil material has been disturbed and rock outcrop where the underlying bedrock has been exposed. Inclusions make up about 30 percent of the unit.

Surface runoff ranges from slow to rapid. Permeability is rapid or very rapid. Other soils properties vary greatly and can be determined only by onsite investigation.

Older abandoned pits have some drought tolerant grasses and shrubs. Pits that are no longer mined should be smoothed and reclaimed to prevent erosion.

Some abandoned pits are used for urban development. Onsite investigation is needed to determine the suitability of this unit for most uses. Poor filtering is a severe limitation for septic tank absorption fields.

A capability subclass is not assigned for this unit.

Pu—Pits, quarry

This unit consists of exposed bedrock in areas partially quarried for rock material. Areas are oval or irregularly shaped. They commonly range from 5 to 800 acres. These pits have rolling or hilly surfaces with steep or very steep slopes along the edges. Because of the variability of this unit, a typical pedon is not provided.

Included with this unit in mapping are areas of Chatfield, Hollis, Galway, Farmington, Nassau, and Cardigan soils where the overlying soil material is undisturbed. Areas of poorly drained and very poorly drained Sun soils are included in undisturbed depressions and along drainageways. Also included are areas of Udorthents where the overlying soil material has been disturbed. Inclusions make up about 30 percent of the unit.

Surface runoff ranges from very slow to rapid. Other soils properties vary greatly and can be determined only by on site investigation.

Some abandoned quarries are used for urban development. On-site investigation is needed to determine the suitability of this unit for most uses.

A capability subclass is not assigned for this unit.

PwB—Pittstown silt loam, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, and moderately well drained Pittstown soils that formed in glacial till deposits. It is on broad hilltops, concave foot slopes, and along drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 275 acres. Slopes are smooth.

The typical sequence, depth, and composition of

the layers of Pittstown soils are as follows—

Surface layer:

Surface to 8 inches, dark brown silt loam

8 to 10 inches, pale brown silt loam

Subsoil:

10 to 22 inches, light olive brown silt loam with mottles

Substratum:

22 to 35 inches, dark yellowish brown channery silt loam with mottles, firm and dense

35 to 80 inches, light olive brown channery silt loam with mottles, very firm and dense

Included with this soil in mapping are areas of well drained Bernardston soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained fine textured Canandaigua soils. Bernardston soils are on slightly higher areas and Punsit soils are in slightly lower areas. Sun soils and Canandaigua soils are along drainageways and in depressions. Areas of Georgia soils are included where the substratum is less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till

Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum

Available Water Capacity: high

Soil Reaction: very strongly acid to moderately acid above 30 inches, very strongly acid to slightly acid below 30 inches

Surface Runoff: medium

Erosion Hazard: slight

Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Nov-Apr)

Rooting Zone: restricted by firm, dense substratum

Depth to Bedrock: more than 60 inches

Flooding Hazard: none

This soil meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This soil is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. The seasonal high water can delay spring tillage and planting. Subsurface drainage to drain wetter inclusions and diverting surface runoff from higher areas will reduce wetness. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak on this soil is moderate. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines, adding fill above the impermeable substratum, and installing a drainage system around the filter field with diversions to intercept runoff from higher areas will allow onsite sewage disposal in many places.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarser grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Slope and small stones are also limitations for playgrounds. Adding sandy fill, subsurface drainage, and diverting runoff from higher areas will cover small stones and reduce wetness. Grading will reduce the slope limitation.

The capability subclass is IIe.

PwC—Pittstown silt loam, 8 to 15 percent slopes

This unit consists of very deep, sloping, and moderately well drained Pittstown soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 75 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Pittstown soils are as follows—

Surface layer:
Surface to 8 inches, dark brown silt loam
8 to 10 inches, pale brown silt loam

Subsoil:
10 to 22 inches, light olive brown silt loam with mottles

Substratum:
22 to 35 inches, dark yellowish brown channery silt loam with mottles, firm and dense
35 to 80 inches, light olive brown channery silt loam with mottles, very firm and dense

Included in mapping are areas of well drained Bernardston soils, somewhat poorly drained Punsit soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Bernardston soils are on slightly higher areas and Punsit soils are in slightly lower areas. Sun soils and fine textured Canandaigua soils are along drainageways and in depressions. Areas of Georgia soils are included where the substratum is less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: very strongly acid to moderately acid above 30 inches, very strongly acid to slightly acid below 30 inches
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: perched at 1.5 to 3.0 feet (Nov-Apr)
Rooting Zone: restricted by firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for cultivated cropland or pastureland. Other areas are used for woodland or residential development.

This soil is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. The seasonal high water can delay spring tillage and planting. Subsurface drainage to drain wetter inclusions and diverting surface runoff from higher areas will reduce wetness. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak on this unit is moderate. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Logging trails laid out across slopes will reduce the risk of erosion.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines, adding fill above the impermeable substratum, and installing a drainage system around the filter field with diversions to intercept runoff from higher areas will allow onsite sewage disposal in many places.

The seasonal high water table, slope, and frost action are limitations for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarser grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Slope is also a limitation for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Adding sandy fill, subsurface drainage, and diverting runoff from higher areas will cover small stones and reduce wetness. Water bars will also reduce wetness on trails. Grading will reduce the slope limitation.

The capability subclass is IIIe.

PzA—Punsit silt loam, 0 to 3 percent slopes

This unit consists of very deep, nearly level, and somewhat poorly drained Punsit soils that formed in glacial till deposits. It is in depressions and along

drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Punsit soils are as follows—

Surface:
Surface to 6 inches, brown silt loam

Subsoil:
6 to 11 inches, light brownish gray silt loam with mottles
11 to 17 inches, grayish brown silt loam with mottles

Substratum:
17 to 80 inches, olive silt loam with mottles, firm and dense

Included with this soil in mapping are areas of moderately well drained Pittstown soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained fine textured Canandaigua soils. Pittstown soils are in slightly higher areas. Sun soils and Canandaigua soils are in depressions and along drainageways. Areas of Massena soils are included where the substratum is less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: slightly acid or moderately acid
Surface runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 0.5 to 1.5 feet (Feb-Apr)
Rooting Zone: restricted by firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Where drained, this unit meets the criteria for prime farmland. Most areas of this soil are used for pastureland, woodland, or brushland. Other areas are used for cultivated cropland or residential development.

This unit is moderately suited for cultivated crops. The seasonal high water table delays spring planting and tillage. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is moderately suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak on this soil is moderately high. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Seedling mortality is moderate because of the seasonal high water table. Wetness limits the use of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines, adding fill above the impermeable substratum, and installing a drainage system around the filter field with diversions to intercept runoff from higher areas will allow onsite sewage disposal in some places. A more suitable site should be considered on a drier inclusion or nearby soil with faster percolation.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Adding sandy fill, subsurface drainage, and diverting runoff from higher areas will cover small stones and reduce these limitations.

The capability subclass is IIIw.

PzB—Punsit silt loam, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, and somewhat poorly drained Punsit soils that formed in glacial till deposits. It is on concave foot slopes and

along drainageways on till plains. Areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Punsit soils are as follows—

Surface:
Surface to 6 inches, brown silt loam

Subsoil:
6 to 11 inches, light brownish gray silt loam with mottles
11 to 17 inches, grayish brown silt loam with mottles

Substratum:
17 to 80 inches, olive silt loam with mottles, firm and dense

Included in mapping are areas of moderately well drained Pittstown soils, poorly drained and very poorly drained Sun soils, and poorly drained and very poorly drained Canandaigua soils. Pittstown soils are in slightly higher areas. Sun soils and fine textured Canandaigua soils are in depressions and along drainageways. Areas of Massena soils are included where the substratum is less dense. Also included are soils that have a higher clay content in the subsoil. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: slightly acid or moderately acid
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: perched at 0.5 to 1.5 feet (Feb-Apr)
Rooting Zone: restricted by firm, dense substratum
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Where drained, this unit meets the criteria for prime farmland. Most areas of this unit are used for pastureland, woodland, or brushland. Other areas are used for cultivated crops or residential development.

This unit is moderately suited for cultivated crops. The seasonal high water table delays spring planting and tillage. Subsurface drainage and diverting runoff from higher areas will reduce wetness. Cover crops, conservation tillage, and crop rotations will reduce any erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is moderately suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak on this unit is moderately high. Windthrow hazard is moderate, particularly where the dense substratum is close to the surface restricting root penetration by larger trees. Seedling mortality is moderate because of the seasonal high water table. Wetness limits operation of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Subsurface drainage, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

The seasonal high water table and slow percolation are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines, adding fill above the impermeable substratum, and installing a drainage system around the filter field with diversions to intercept runoff from higher areas allows onsite sewage disposal in some places. A more suitable site should be considered on a drier inclusion or nearby soil with faster percolation.

The seasonal high water table and frost action are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarse grained subgrade to frost depth will reduce these limitations.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. Slope is also a limitation for playgrounds. Adding sandy fill, subsurface drainage, and diverting runoff from higher areas will reduce wetness. Grading will reduce the slope limitation.

The capability subclass is IIIw.

Ra—Raynham silt loam

This unit consists of very deep, nearly level, and somewhat poorly drained Raynham soils that formed in lacustrine deposits. It is on broad depressions and flat lowlands. Areas are oval or irregularly shaped. They commonly range from 5 to 225 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Raynham soils are as follows—

Surface layer:
Surface to 2 inches, very dark brown silt loam

Subsurface layer:
2 to 8 inches, dark grayish brown silt loam

Subsoil:
8 to 26 inches, dark gray silt loam with mottles
26 to 30 inches, grayish brown silt loam with mottles

Substratum:
30 to 80 inches, gray very fine sandy loam with mottles

Included in mapping are areas of a similar soil that is poorly drained. Also included are areas of well drained Unadilla soils, moderately well drained Scio soils, very poorly drained Livingston soils, and poorly drained and very poorly drained Canandaigua soils. Unadilla soils and Scio soils are in higher areas. Livingston soils and Canandaigua soils are in depressions and drainageways. Also included are areas of finer textured Kingsbury and Rhinebeck soils. Massena soils and poorly drained and very poorly drained Sun soils are along the perimeter of the unit near uplands. Included areas make up about 15 percent of the map unit.

Important soil properties—

Parent Material: lacustrine deposits
Permeability: moderate or moderately slow in the surface layer and subsoil, slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface and subsoil, moderately acid to mildly alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 0.5 to 2.0 feet (Nov-May)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Where drained, this unit meets the criteria for prime farmland. Most areas of this unit are used for cultivated cropland, woodland, or brushland. Other areas are used for pasture or residential development.

This unit is poorly suited to cultivated crops. Where drained, this soil is moderately suited to cultivated crops. Tile drains covered with filter material and diversion ditches work well, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is poorly suited to pasture. The seasonal high water table limits the selection of forage crops that can be grown and interferes with farming operations. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for red maple is moderate. Seedling mortality is moderate and windthrow hazard is severe because of the seasonal high water table. Wetness severely limits the use of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements or septic tank absorption fields. Slow percolation is also a limitation for septic tank absorption fields. A more suitable site should be considered for these uses in a drier inclusion or nearby soil.

Frost action and the seasonal high water table are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarser grained subgrade to frost depth will reduce these limitations.

This unit has fair potential for wetland wildlife habitat.

The capability subclass is IIIw.

Sc—Scio silt loam

This unit consists of very deep, nearly level, and moderately well drained Scio soils that formed in lacustrine deposits. It is on broad flatlands and valley floors. Areas are elongated or irregularly shaped. They commonly range from 5 to 50 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Scio soils are as follows—

Surface layer:
Surface to 8 inches, dark grayish brown silt loam

Subsoil:
8 to 12 inches, yellowish brown silt loam
12 to 23 inches, brown very fine sandy loam with mottles
23 to 29 inches, yellowish brown very fine sandy loam with mottles

29 to 34 inches, olive gray silt loam with mottles

Substratum:
34 to 72 inches, brown silt loam and very fine sandy loam with mottles

Included in mapping are areas of well drained Unadilla soils, somewhat poorly drained Raynham soils, and very poorly drained Livingston soils. Unadilla soils are in slightly higher soils. Raynham soils are in slightly lower areas and along drainageways. Livingston soils are in clayey areas in depressions and drainageways. Some included soils have higher reactions in the surface layer and subsoil because of liming. Also included are areas with slopes up to 6 percent. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: lacustrine deposits
Permeability: moderate in the surface layer and subsoil, and moderately rapid or rapid in the substratum
Available Water Capacity: high
Soil Reaction: extremely acid to strongly acid in the surface and subsoil, strongly acid to mildly alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 1.5 to 2.0 feet (Mar-May)
Rooting Zone: restricted by seasonal high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit meets the criteria for prime farmland. Most areas are used for cultivated crops or pasture. Other areas are used for woodland or residential development.

This unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. The seasonal high water table can delay spring tillage. Tile drainage and diversions will reduce wetness. Cover crops, conservation tillage, and crop rotations will improve soil tilth, and maintain productivity.

This soil is well suited to pasture. Erosion may be a hazard, particularly on areas left bare of plant cover during establishment. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Subsurface drains, footing or foundation drains backfilled with gravel, waterproofing the outside of basement walls, and diverting runoff from higher areas will reduce wetness. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

The seasonal high water table is the main limitation if this unit is used for septic tank absorption fields. Installing a drainage system around the filter field with diversions to intercept runoff from higher areas will reduce wetness.

Frost action is the main limitation if this unit is used for septic tank absorption fields. Installing a drainage system and providing a coarse grained subgrade to frost depth will reduce this limitation.

The seasonal high water table is the main limitation if this unit is used for camping and picnic areas, playground, and trails. Subsurface drainage and diverting runoff from higher areas will reduce wetness.

The capability subclass is IIw.

SkB—Stockbridge silt loam, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, and well drained Stockbridge soils that formed in glacial till deposits. It is on hilltops and broad till plains. Areas are oval or irregularly shaped. They commonly range from 5 to 375 acres. Slopes are smooth.

The typical sequence, depth and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

Included with this soil in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia soils and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of Bernardston soils where the substratum is denser and more acid. Charlton soils are included in areas where the soil is more acid and the rock fragments are dominated by schist, granite, or gneiss. Also included are areas of moderately deep

well drained and moderately well drained Galway soils, and shallow well drained and somewhat excessively drained Farmington soils where the underlying limestone bedrock is shallower than 40 inches. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow and moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit meets the criteria for prime farmland. Most areas are used for cropland, pastureland, or woodland. Other areas are used for residential development.

This unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This unit is well suited to pasture and hay. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high.

This unit has few limitations for dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation is the main limitation if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in most places.

Frost action is the main limitation if this unit is used for local roads and streets. Providing coarse grained subgrade to frost depth will reduce this limitation.

This soil has few limitations for trails. Slow percolation is the main limitation if this unit is used for camping and picnic areas. Slope and small stones are the main limitations for playgrounds. Subsurface drainage will reduce the slow percolation limitation. Adding sandy fill will cover small stones, and grading will reduce the slope limitation.

The capability subclass is IIe.

SkC—Stockbridge silt loam, 8 to 15 percent slopes

This unit consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. It is on hills and side slopes. The areas are oval, elongated, or irregularly shaped. They commonly range from 5 to 400 acres. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

Included in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia soils and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of Bernardston soils where the substratum is denser and more acid. Charlton soils are included in areas where the soils are more acid and the rock fragments are dominated by schist, granite, or gneiss. Also included are areas of moderately deep well drained and moderately well drained Galway soils. Shallow well drained and somewhat excessively drained Farmington soils are included where the underlying limestone bedrock is shallower than 40 inches. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow to moderately slow in and the substratum
Available Water Capacity: high

Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for cropland, pastureland, or woodland. Other areas are used for residential development.

This unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time (fig. 10).

This unit is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Logging trails laid out across slopes reduce the risk of erosion.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Slow percolation is the main limitation if this unit is

Figure 10.—Stripcropping reduces soil erosion on steeper Stockbridge soil (background).

used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines will allow on-site sewage disposal in most places.

Slope and frost action are the main limitations if this unit is used for local roads and streets. Constructing roads on the contour will reduce the slope limitation. Providing coarse grained subgrade to frost depth will reduce frost action.

This unit has few limitations for trails. Slope is the main limitation if this unit is used for camping and picnic areas and playgrounds. Slow percolation is also a limitation for camping and picnic areas. Small stones are also a limitation for playgrounds. Grading will reduce the slope limitation. Subsurface drainage will reduce the slow percolation limitation. Adding sandy fill will cover small stones.

The capability subclass is IIIe.

SkD—Stockbridge silt loam, 15 to 25 percent slopes

This unit consists of very deep, moderately steep, and well drained Stockbridge soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 350 acres in size. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

Included in mapping are areas of moderately well drained Georgia soils and poorly drained and very poorly drained Sun soils. Georgia soils are in slightly lower and concave areas and Sun soils are along drainageways and in depressions. Also included are areas of Bernardston soils where the substratum is denser and more acid. Charlton soils are included where the soil is more acid and the rock fragments are dominated by schist, granite, or gneiss. Also included are areas of moderately deep well drained and moderately well drained Galway soils and shallow well drained and somewhat excessively drained Farmington soils where the underlying limestone bedrock is shallower than 40 inches. Included areas make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow to moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for pastureland or woodland. Other areas are used for cropland or residential development.

This soil is poorly suited to cultivated crops. Erosion is a severe hazard, particularly on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is moderately suited to pasture. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope is the main limitation if this unit is used for dwellings with basements. Erosion is a severe hazard during construction. Designing the dwelling to conform to the natural slope on the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered on a less sloping inclusion or nearby soil.

Slow percolation and slope are the main limitations if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the length of the distribution lines and placing the lines on

the contour will allow onsite sewage disposal in some places. A more suitable site should be considered in a less sloping inclusion or nearby soil with faster percolation.

Slope is the main limitation if this unit is used for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade to frost depth will reduce frost action.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is IVe.

SkE—Stockbridge silt loam, 25 to 45 percent slopes

This unit consists of very deep, steep, and well drained Stockbridge soils that formed in glacial till deposits. It is on hills and side slopes. Areas are elongated or irregularly shaped. They commonly range from 5 to 50 acres in size. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

Included in mapping are areas of poorly drained and very poorly drained Sun soils in depressions and along drainageways. Also included are areas of Bernardston soils where the substratum is denser and more acid. Charlton soils are included in areas where the soil is more acid and the rock fragments are dominated by schist, granite, or gneiss. Also included are areas of moderately deep, well drained and moderately well drained Galway soils and shallow, well drained and somewhat excessively drained Farmington soils where the underlying limestone bedrock is shallower than 40 inches. Included areas make up about 15 percent of this map unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this unit are used for woodland.

This soil is unsuited to cultivated crops and pasture because of steep slope. Erosion is a very severe hazard.

The potential productivity for northern red oak is moderately high. Erosion is a severe hazard and is accelerated where timber harvest damages vegetative cover. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Steep slopes severely limit the safe use of equipment.

Steep slope is the main limitation if this unit is used for dwellings with basements or septic tank absorption fields. Slow percolation is also a limitation for septic tank absorption fields. Erosion is a very severe hazard during construction. A more suitable site for these uses should be selected on a less sloping inclusion or nearby soil.

Steep slope is the main limitation if this unit is used for local roads and streets. Frost action is also a limitation. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing coarse grained subgrade to frost depth will reduce frost action.

Steep slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

SmB—Stockbridge-Farmington complex, undulating, rocky

This unit consists of very deep, well drained Stockbridge soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hilltops and till plains that are underlain by folded limestone bedrock. Stockbridge soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 50 percent Stockbridge soils, 30 percent Farmington soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Stockbridge and Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or

irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 1 to 6 percent.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia soils and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of well drained and moderately well drained Galway soils where the underlying bedrock is between 20 and 40 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Stockbridge soils—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in surface, moderately acid to neutral in subsoil, moderately acid to moderately alkaline in substratum
Surface Runoff: medium
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Farmington soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for cropland, pastureland, or woodland. Other areas are in residential development.

This unit is well suited to cultivated crops. Erosion may be a hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture. Erosion may be a hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high or moderate. Seedling mortality is high in areas of Farmington soils because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Erosion is a moderate hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Stockbridge soils. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. Slow percolation in areas of Stockbridge soils is also a limitation. Uneven slopes and variable depth to bedrock reduce site selection.

Locating septic tank absorption fields in areas of very deep Stockbridge soils and modifying conventional systems by extending the length of the distribution lines will allow onsite sewage disposal in most places.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Providing coarse grained subgrade to frost depth will reduce frost action.

This unit has few limitations for trails. Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Slope and small stones are also limitations for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations.

The capability subclass is IIe.

SmC—Stockbridge-Farmington complex, rolling, rocky

This unit consists of very deep, well drained Stockbridge soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hilltops and side slopes that are underlain by folded limestone bedrock. Stockbridge soils are commonly on lower concave slopes and Farmington soils are commonly on hilltops, upper slopes, and near areas of rock outcrop. This unit consists of about 50 percent Stockbridge soils, 30 percent Farmington soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Stockbridge and Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are oval or irregularly shaped. They commonly range from 5 to 200 acres. Slopes are complex and range from 5 to 16 percent.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia soils and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of well drained and moderately well drained Galway soils where the underlying bedrock is between 20 and 40 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Stockbridge soils—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Farmington soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: medium
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for cropland or pastureland. Other areas are used for woodland or residential development.

This unit is moderately suited to cultivated crops. Erosion is a moderate hazard, particularly on areas left bare of plant cover. Operating machinery is somewhat

restricted by rock outcroppings and uneven slopes. Cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion. Tillage at proper moisture content will improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is well suited to pasture. Erosion is a moderate hazard, particularly on areas left bare of plant cover during establishment. Operating machinery is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management, as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high or moderate. Seedling mortality is high in areas of Farmington soils because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality. Logging trails laid out across the slope reduce the risk of erosion.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for dwellings with basements. Slope is also a limitation. Erosion is a severe hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Stockbridge soils. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of the unit are the main limitations if this unit is used for septic tank absorption fields. Slow percolation in areas of Stockbridge soils is also a limitation. Uneven slopes and variable depth to bedrock reduce site selection. Locating septic tank absorption fields in areas of very deep Stockbridge soils and modifying a conventional system by extending the length of the distribution lines will allow onsite sewage disposal in most places.

Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for local roads and streets. Slope and frost action are also limitations. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour will reduce the slope limitation. Providing coarse grained subgrade to frost depth will reduce frost action.

This unit has few limitations for trails. Shallow depth to bedrock in areas of Farmington soils and rock outcroppings over portions of this unit are the main limitations if this unit is used for camping and picnic areas and playgrounds. Slope is a limitation for camping and picnic areas and playgrounds. Small stones are also a limitation for playgrounds. Careful site selection, grading, and adding sandy fill will reduce these limitations.

The capability subclass is IIIe.

SmD—Stockbridge-Farmington complex, hilly, rocky

This unit consists of very deep, well drained Stockbridge soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. It is on hills and side slopes and are underlain by folded limestone bedrock. Stockbridge soils are commonly on lower concave slopes and Farmington soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 50 percent Stockbridge soils, 30 percent Farmington soils, and 20 percent other soils and rock outcrop. Rock outcrop covers 0.1 to 2 percent of the surface. The Stockbridge and Farmington soils and rock outcrop are in such an intricate pattern that they were not mapped separately. Areas are elongated or irregularly shaped. They commonly range from 5 to 100 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

The typical sequence, depth, and composition of the layers of Farmington soils are as follows—

Surface layer:
Surface to 7 inches, dark brown loam

Subsoil:
7 to 15 inches, light olive brown very fine sandy loam

Bedrock:
15 inches, hard gray limestone

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils along

drainageways and in depressions. Also included are areas of well drained and moderately well drained Galway soils where the underlying bedrock is between 20 and 40 inches deep. Inclusions and rock outcrop make up about 20 percent of the unit.

Important soil properties of the Stockbridge soils—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Important soil properties of the Farmington soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: very low
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to mildly alkaline in the subsoil
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Most areas of this unit are used for woodland. Other areas are used for pasture or residential development.

This unit is unsuited to cultivated crops because of slope. Pasture is a better use, but the suitability is only poor. Erosion is a severe hazard, particularly on areas left bare of plant cover during establishment. Operating equipment is somewhat restricted by rock outcroppings and uneven slopes. Overgrazing is a major concern of pasture management as it causes the reduction or loss of desirable pasture plants. Rotational grazing and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high to moderate. Erosion is a moderate hazard and is accelerated where timber harvest damages vegetative cover. Seedling mortality is high in areas of Farmington soils because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in the spring helps to reduce the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Moderately steep slopes limit safe operation of equipment.

Shallow depth to bedrock in areas of Farmington soils, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used for dwellings with basements. Erosion is a very severe hazard during construction. Uneven slopes and variable depth to bedrock reduce site selection. Where possible, dwellings with basements should be constructed in areas of very deep Stockbridge soils. Designing the dwelling to conform to the natural slope of the land will reduce the slope limitation. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Shallow depth to bedrock in areas of Farmington soils, rock outcroppings over portions of the unit, and slope are the main limitations if this unit is used for septic tank absorption fields. Slow percolation in areas of Stockbridge soils is also a limitation. Uneven slopes and variable depth to bedrock reduce site selection. Locating septic tank absorption fields in areas of very deep Stockbridge soils and modifying conventional systems by extending the length of the distribution lines and placing lines on the contour will allow onsite sewage disposal in places. A more suitable site should be considered in a less sloping inclusion or nearby soil.

Shallow depth to bedrock in areas of Farmington soils, rock outcroppings over portions of this unit, and slope are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing coarse grained subgrade to frost depth will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIe.

SrB—Stockbridge-Urban land complex, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, well drained Stockbridge soils and urban land. It is on hilltops and broad till plains. The unit consists of about 40 percent Stockbridge soils, 35 percent urban land, and 25 percent other soils. The Stockbridge soils and

urban land are in such an intricate pattern that they were not separated in mapping. Areas are oval, rectangular, or irregularly shaped. They commonly range from 5 to 100 acres in size. Slopes are smooth.

The typical sequence, depth, and composition of the layers of Stockbridge soils are as follows—

Surface layer:
Surface to 6 inches, very dark grayish brown silt loam

Subsoil:
6 to 11 inches, dark brown silt loam
11 to 23 inches, yellowish brown silt loam

Substratum:
23 to 80 inches, brown silt loam

Typically, the urban land consists of areas covered by buildings, streets, parking lots, and other impervious surfaces which obscure soil identification. The natural soil layers have been altered or mixed with non-soil material such as bricks, broken concrete, or cinders.

Included with this unit in mapping are areas of moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Georgia soils and Massena soils are in slightly lower and concave areas. Sun soils are along drainageways and in depressions. Also included are areas of Bernardston soils where the subsoil is denser and more acid. Areas of moderately deep, well drained and moderately well drained Galway soils, and shallow, well drained and somewhat excessively drained Farmington soils are included where the underlying limestone bedrock is shallower than 40 inches. Also included are areas of Udorthents adjacent to buildings and other structures. Inclusions make up about 25 percent of this complex.

Important soil properties of the Stockbridge soils—

Parent Material: glacial till
Permeability: moderate in the surface layer and subsoil, slow or moderately slow in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to neutral in the surface, moderately acid to neutral in the subsoil, moderately acid to moderately alkaline in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This unit is in urban and suburban development. The open areas are used for lawns, gardens, and woodland or brushland between structures.

This unit has few limitations for dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Slow percolation is the main limitation if this unit is used for septic tank absorption fields. Modifying a conventional system by extending the distribution lines will allow onsite sewage disposal in most places.

Frost action is the main limitation if this unit is used for local roads streets. Providing coarse grained subgrade to frost depth will reduce this limitation.

This unit has few limitations for trails. Slow percolation is the main limitation for camping and picnic areas. Slope and small stones are the main limitations for playgrounds. Subsurface drainage will reduce the slow percolation limitation. Adding sandy fill will cover the small stones, and grading will reduce the slope limitation.

A capability subclass is not assigned for this unit.

Su—Sun silt loam

This unit consists of very deep, nearly level, and poorly drained and very poorly drained Sun soils that formed in glacial till deposits. It is in depressions and along drainageways between hills and on till plains. Areas of this unit are oval, elongated, or irregularly shaped. They commonly range from 5 to 250 acres in size. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Sun soils are as follows—

Surface layer:
Surface to 4 inches, dark grayish brown silt loam

Subsoil:
4 to 9 inches, light brownish gray silt loam with mottles
9 to 16 inches, grayish brown loam with mottles
16 to 22 inches, olive gray gravelly loam with mottles

Substratum:
22 to 80 inches, olive gray gravelly loam with mottles

Included with this soil in mapping are areas of very poorly drained Palms soils in the center of depressions. Also included are areas of somewhat poorly drained Massena soils on slightly higher areas. Also included are areas of Canandaigua soils where the soil has a higher clay content. Small areas where the soil has a mean annual soil temperature less than 47 degrees Fahrenheit are included in the mountains of the

extreme northeastern part of the county. Stony areas and soils that have a surface layer of water deposited materials are also included. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: glacial till
Permeability: moderate in the surface layer, slow or very slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: strongly acid to slightly acid in the surface, moderately acid to neutral in the subsoil, neutral to moderately alkaline in the substratum
Surface Runoff: very slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: +1.0 to 0.5 feet (Nov-Apr)
Rooting Zone: restricted by high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

Most areas of this soil are used for woodland, brushland, or water tolerant sedges and alders.

This soil is poorly suited to cultivated crops. Where drained, this soil is moderately suited to cultivated crops. Tile drains covered with filter material and diversion ditches reduce wetness, but this soil is in low positions in the landscape and suitable outlets are hard to establish. Cover crops, conservation tillage, crop rotations, and tillage at proper moisture content will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is poorly suited to pasture. The seasonal high water table limits the selection of forage crops that can be grown and interferes with farming operations. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when the soil is wet, and proper stocking rates help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for red maple is moderate. Seedling mortality is moderate and windthrow hazard is severe because of the seasonal high water table. Wetness severely limits the use of equipment.

The seasonal high water table is the main limitation if this unit is used for dwellings with basements, or septic tank absorption fields. Slow percolation is also a limitation for septic tank absorption fields. A more suitable site should be selected for these uses in a drier inclusion or nearby soil.

Frost action and the seasonal high water table are the main limitations if this unit is used for local roads and streets. Construction on raised fill materials, installing a drainage system, and providing a coarser grained subgrade to frost depth will reduce these limitations.

This soil has good potential for wetland wildlife habitat.

The capability subclass is Vw.

TmD—Taconic-Macomber-Rock outcrop complex, hilly

This unit consists of shallow, somewhat excessively drained Taconic soils, moderately deep, well drained Macomber soils and areas of rock outcrop. It is on mountains and side slopes that are underlain by folded phyllite, schist, slate, or quartzite bedrock. It is in mountainous areas in the northeastern part of the county where the mean annual soil temperature is less than 47 degrees Fahrenheit. Taconic soils are commonly on upper slopes and near areas of rock outcrop and Macomber soils are commonly on lower concave slopes. This unit consists of about 40 percent Taconic soils, 35 percent Macomber soils, 15 percent rock outcrop, and 10 percent other soils. The Taconic and Macomber soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated with a north-south orientation or are irregularly shaped. They commonly range from 5 to 250 acres. Slopes are complex and range from 15 to 30 percent.

The typical sequence, depth, and composition of the layers of Taconic soils are as follows—

Surface layer:
0 to 3 inches, black channery silt loam

Subsoil:
3 to 12 inches, yellowish brown very channery silt loam

Bedrock:
12 inches, folded phyllite and quartz bedrock

The typical sequence, depth, and composition of the layers of Macomber soils are as follows—

Surface layer:
Surface to 4 inches, black very channery silt loam and extremely channery loam

Subsoil:
4 to 24 inches, dark yellowish brown channery loam

Bedrock:
24 inches, folded schist bedrock

Typically, the rock outcrop consists of folded phyllite, schist, slate, or quartzite.

Included with this unit in mapping are areas of poorly drained and very poorly drained Sun soils in

depressions and along drainageways. Also included are areas of soils where the underlying bedrock is deeper than 40 inches. Inclusions make up about 10 percent of the unit.

Important soil properties of the Taconic soils—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

Important soil properties of the Macomber soils—

Parent Material: glacial till
Permeability: moderate
Available Water Capacity: moderate
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: rapid
Erosion Hazard: severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 20 to 40 inches
Flooding Hazard: none

All areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of shallow depth to bedrock, frequent rock outcroppings, short growing season, and slope.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Moderately steep slopes limit the safe operation of equipment.

Slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements. The short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. Dwellings may be built above the bedrock and landscaped with additional fill. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover will help to control erosion and sedimentation. A more suitable site should be considered on a deeper, less sloping soil.

Shallow depth to bedrock, frequent rock outcroppings, and slope are the main limitations if this unit is used for septic tank absorption fields. A pollution hazard exists because the soil is not thick enough to filter the effluent. A more suitable site should be selected in a deeper, less sloping soil.

Shallow depth to bedrock, frequent rock outcroppings, and slope are the main limitations if this unit is used for local roads and streets. Frost action is also a limitation. Careful planning of grades and road locations will avoid some removal of rock. Constructing roads on the contour or locating them on less sloping inclusions will reduce the slope limitation. Providing a coarse grained subgrade will reduce frost action.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIs.

TrE—Taconic-Rock outcrop complex, steep

This unit consists of shallow, somewhat excessively drained Taconic soils and areas of rock outcrop. It is on mountains and side slopes that are underlain by folded phyllite, schist, slate, or quartzite bedrock. It is in mountainous areas in the northeastern part of the county where the mean annual soil temperature is less than 47 degrees Fahrenheit. Taconic soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 50 percent Taconic soils, 40 percent rock outcrop, and 10 percent other soils. The Taconic soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated with a north-south orientation or are irregularly shaped. They commonly range from 5 to 250 acres. Slopes are complex and range from 25 to 45 percent.

The typical sequence, depth, and composition of the layers of Taconic soils are as follows—

Surface layer:
0 to 3 inches, black channery silt loam

Subsoil:
3 to 12 inches, yellowish brown very channery silt loam

Bedrock:
12 inches, folded phyllite and quartz bedrock

Typically, the rock outcrop consists of folded phyllite, schist, slate, or quartzite.

Included with this unit in mapping are areas of well drained Macomber soils where the underlying bedrock is between 20 and 40 inches deep. Poorly drained and very poorly drained Sun soils are in depressions and along drainageways. Inclusions make up about 10 percent of the unit.

Important soil properties of the Taconic soils—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

All areas of this unit are used for woodland.

This unit is unsuited to cultivated crops and pasture because of slope, shallow depth to bedrock, frequent rock outcroppings, and a short growing season.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is severe because of droughtiness and windthrow hazard is moderate because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Steep slopes limit safe operation of equipment.

Slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, and local roads and streets. The short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. A more suitable site for these uses should be selected in a deeper, less sloping soil.

Slope is the main limitation for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

TrF—Taconic-Rock outcrop complex, very steep

This unit consists of shallow, somewhat excessively drained Taconic soils and areas of rock outcrop. It is on mountains and side slopes that are underlain by folded phyllite, schist, slate, or quartzite bedrock. It is in mountainous areas in the northeastern part of the county where the mean annual soil temperature is less than 47 degrees Fahrenheit. Taconic soils are commonly on upper slopes and near areas of rock outcrop. This unit consists of about 50 percent Taconic soils, 40 percent rock outcrop, and 10 percent other soils. The Taconic soils and rock outcrop are in such an intricate pattern that they were not separated in mapping. Areas are elongated with a north-south orientation or are irregularly shaped. They commonly range from 5 to 750 acres. Slopes are complex and range from 45 to 70 percent.

The typical sequence, depth, and composition of the layers of Taconic soils are as follows—

Surface layer:
0 to 3 inches, black channery silt loam

Subsoil:
3 to 12 inches, yellowish brown very channery silt loam

Bedrock:
12 inches, folded phyllite and quartz bedrock

Typically, the rock outcrop consists of folded phyllite, schist, slate, or quartzite.

Included with this unit in mapping are areas of well drained Macomber soils where the underlying bedrock is between 20 and 40 inches deep. Poorly drained and very poorly drained Sun soils are in depressions and along drainageways. Inclusions make up about 10 percent of the unit.

Important soil properties of the Taconic soils—

Parent Material: glacial till
Permeability: moderate or moderately rapid
Available Water Capacity: very low
Soil Reaction: very strongly acid or strongly acid
Surface Runoff: very rapid
Erosion Hazard: very severe
Depth to Seasonal High Water Table: more than 6 feet
Rooting Zone: restricted by bedrock
Depth to Bedrock: 10 to 20 inches
Flooding Hazard: none

All areas of this unit are used for woodland. This unit is unsuited to cultivated crops and pasture because of slope, shallow depth to bedrock, frequent rock outcroppings, and a short growing season.

The potential productivity of this unit for northern red oak is moderate. Seedling mortality is moderate because of droughtiness and windthrow hazard is severe because of shallow depth to bedrock. Planting early in spring reduces the impact of summer droughtiness and reduces seedling mortality. Logging trails, with water bars, laid out across the slope reduce the risk of erosion. Steep slopes limit the safe operation of equipment.

Slope, shallow depth to bedrock, and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. The short uneven slopes are also a limitation. Erosion is a very severe hazard during construction. A more suitable site for these uses should be selected in a deeper, less sloping soil.

Slope is the main limitation if this unit is used for trails. Constructing trails with switchbacks, log steps, and water bars will reduce the slope limitation.

The capability subclass is VIIs.

Ud-Udorthents, smoothed

This unit consists of very deep, somewhat excessively drained to moderately well drained soils that have been altered by cutting and filling. It is in and adjacent to urban areas, industrial areas, schoolyards, and borrow areas. Areas are rectangular or irregularly shaped. They commonly range from 5 to 275 acres. Slopes are dominantly 0 to 8 percent but range from 8 to 25 percent on the sides of excavations and along highways.

Because of the variability of the unit, a typical pedon is not provided. Fill material is greater than 20 inches thick over original soil and is dominantly loamy, although it ranges from silt loam to sand. Rock fragment content ranges from 0 to 60 percent. In some areas, fill consists partly of non-soil materials such as broken concrete, household garbage, and vegetative debris.

Included with this unit in mapping are areas of Udorthents which have a wet substratum, urban land, rock outcrop, and undisturbed soils. Urban land is adjacent to built up areas. Rock outcrop is in areas which have been cut, exposing bedrock. Undisturbed soils are in areas where the fill is very thin. Inclusions having a wet substratum are in filled areas which were formerly somewhat poorly drained to very poorly drained. Also included are reclaimed gravel and sand pits and the soil is dominated by gravel and sand in these areas. Inclusions make up about 25 percent of the unit.

The characteristics of this unit are so variable that an onsite investigation is required to determine the suitability for proposed uses.

A capability subclass is not assigned for this unit.

Ue—Udorthents, wet substratum

This unit consists of moderately well drained soils that have been altered by filling. It is on filled depressions, drainageways, and areas of tidal marsh. Areas are rectangular or irregularly shaped. They commonly range from 5 to 80 acres. Slopes are dominantly 0 to 3 percent, but range up to 8 percent.

Because of the variability of this unit, a typical pedon is not provided. Fill material is usually greater than 20 inches thick over the original soil surface and ranges in texture from silt loam to sand. In some areas, fill consists partly of non-soil materials such as broken concrete, household garbage, and vegetative debris. Texture of the buried soils ranges from loamy or sandy mineral matter to organic deposits.

Included with this unit in mapping are areas of excessively drained and well drained Udorthents, smoothed, which are in higher portions of the landscape; urban land; rock outcrop; and undisturbed soils that have not been cut or filled. Undisturbed soil is in areas where the fill is very thin. Urban land is in residential or commercial developments. Rock outcrop is in areas where the soil has been removed, exposing bedrock. Inclusions make up about 20 percent of the unit.

The characteristics of this unit are so variable that an onsite investigation is required to determine the suitability for proposed uses.

A capability subclass is not assigned for this unit.

UnB—Unadilla silt loam, undulating

This unit consists of very deep and well drained Unadilla soils that formed in lacustrine deposits. It is on broad flatlands. Areas are irregularly shaped. They commonly range from 5 to 75 acres. Slopes are complex and range from 2 to 6 percent.

The typical sequence, depth, and composition of the layers of Unadilla soils are as follows—

Surface layer:
Surface to 9 inches, dark brown silt loam

Subsoil:
9 to 19 inches, yellowish brown silt loam
19 to 28 inches, dark yellowish brown very fine sandy loam

Substratum:
28 to 70 inches, olive brown very fine sandy loam

Included with this soil in mapping are areas of moderately well drained Scio soils and somewhat poorly drained Raynham soils. Scio soils are in the slightly lower areas. Raynham soils are in shallow depressions and along drainageways. Inclusions make up about 15 percent of this map unit.

Important soil properties—

Parent Material: lacustrine deposits
Permeability: moderate
Available Water Capacity: high
Soil Reaction: high
Surface Runoff: slow
Erosion Hazard: moderate
Depth to Seasonal High Water Table: more than 6 feet

Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: none

This soil meets the criteria for prime farmland. Most areas are used for cultivated cropland or woodland. Other areas are used for pastureland or residential development.

This soil is well suited to cultivated crops. Erosion is a moderate hazard, especially on areas left bare of plant cover. Stripcropping, cross slope tillage, cover crops, conservation tillage, and crop rotations will reduce soil erosion, improve soil tilth, and maintain soil productivity over an extended period of time.

This soil is very well suited to pasture. Overgrazing is a major concern of pasture management as it causes reduction or loss of desirable pasture plants. Rotational grazing, restricted during dry periods, and proper stocking help to increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high.

This soil has few limitations for septic tank absorption fields, or dwellings with basements. Minimizing the removal of vegetation, mulching, and quickly establishing plant cover help to control erosion and sedimentation during construction.

Frost action is the main limitation if this unit is used for local roads and streets. Providing a coarse grained subgrade will reduce frost action.

This soil has few limitations for camping and picnic areas. Slope is the main limitation for playgrounds and high erodibility is the main limitation for trails. Grading will reduce the slope limitation for playgrounds. Constructing trails with switchbacks and water bars will reduce the risk of erosion on trails.

The capability subclass is IIe.

Ur—Urban land

This unit consists of areas where the soil surface is covered by impervious materials. It is in the business centers of villages and cities, mostly in the western and southern portions of the county. Areas are elongated or rectangular. They commonly range from 5 to 700 acres. Slopes range from 0 to 8 percent.

Because these areas are greatly altered by construction, a typical pedon is not provided. The impervious materials include parking lots, shopping centers, industrial parks, and institutional sites.

Included with this unit in mapping are areas of somewhat excessively drained and well drained Udorthents, smoothed; and moderately well drained Udorthents, wet substratum. Udorthents, smoothed are in disturbed areas not covered by buildings and structures. Udorthents, wet substratum, are in areas where several feet of fill have been placed over swamps. Also included are areas of undisturbed soils and rock outcrop. Undisturbed soils are in areas between buildings and structures. Inclusions make up about 10 percent of the unit.

Runoff of rainwater is high and often flows into storm drainage systems. If improperly channeled, the increased runoff from nearby areas can cause severe erosion. Vegetation is generally in narrow row strips along sidewalks, between roadways, and in isolated islands.

Reclamation is required if urban land is converted from its present use. Inclusions in the unit that are not covered by structures may be suitable for uses that are compatible with urban development. On-site investigation is required to determine the suitability for proposed uses.

A capability subclass is not assigned for this unit.

We—Wappinger loam

This soil is very deep, nearly level, and well drained that formed in alluvium deposits. It is on flood plains and alluvial terraces. Areas are elongated or irregularly shaped. They commonly range from 5 to 150 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers of Wappinger soils are as follows—

Surface layer:
Surface to 9 inches, dark yellowish brown loam

Subsoil:
9 to 21 inches, dark yellowish brown loam
21 to 33 inches, dark yellowish brown loam with mottles

Substratum:
33 to 37 inches, dark brown sandy loam with mottles
37 to 60 inches, dark brown extremely gravelly sand

Included with this soil in mapping are areas of moderately well drained Pawling soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Pawling soils and Linlithgo soils are in slightly lower areas. Wayland soils are in depressions and swales. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: recent alluvium

Permeability: moderate in the surface layer and subsoil, moderately rapid to rapid in the substratum
Available Water Capacity: high
Soil Reaction: strongly acid to moderately acid in the surface and subsoil, moderately acid to neutral in the substratum
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: 3 to 5 feet (Feb-Apr)
Rooting Zone: unrestricted
Depth to Bedrock: more than 60 inches
Flooding Hazard: occasional, brief (Nov-May)

This soil meets the criteria for prime farmland. Most areas are in cropland, pasture, or woodland.

This soil is very well suited to cultivated crops. Flooding can briefly delay planting early in spring. Using cover crops and including sod crops in the cropping system help to maintain good soil tilth and protect the soil during periods of flooding. Planting trees along the streambank will help reduce streambank erosion.

This soil is very well suited to pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management as they cause soil compaction and the reduction or loss of desirable pasture plants. Rotational grazing, restricted grazing when wet, and proper stocking rates increase the quantity and quality of feed and forage and maintain pasture productivity.

The potential productivity for northern red oak is moderately high. Brief flooding restricts the operation of equipment.

Flooding is the main limitation if this unit is used for dwellings with basements. A more suitable site should be selected on a soil that does not flood.

Flooding and poor filtering are the main limitations if this unit is used for septic tank absorption fields. There is a severe hazard of groundwater and stream water pollution because of the seasonal high water table and flooding. Also, the rapidly permeable substratum does not adequately filter effluent. A more suitable site should be selected in a less permeable soil that does not flood.

Flooding and frost action are the main limitations if this unit is used for local roads and streets. Providing drainage and building on raised fill with a coarse grained subgrade to frost depth will reduce these limitations. A more suitable site should be considered on a soil that does not flood.

Flooding is the main limitation if this unit is used for camping and picnic areas, playgrounds, and trails. A more suitable site should be selected on a soil that does not flood.

The capability class is I.

Wy—Wayland silt loam

This unit consists of very deep, nearly level, and poorly drained and very poorly drained Wayland soils that formed in alluvium deposits. It is on flood plains. Areas are elongated or irregularly shaped. They range from 6 to 1200 acres. Slopes are smooth and range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers Wayland soils are as follows—

Surface layer:
Surface to 9 inches, very dark gray silt loam

Subsoil:
9 to 13 inches, gray silt loam
13 to 21 inches, gray silty clay loam with mottles
21 to 31 inches, gray silt loam with mottles

Substratum:
31 to 80 inches, gray silt loam

Included with this soil in mapping are areas of moderately well drained Pawling soils and somewhat poorly drained Linlithgo soils on slightly higher portions of the flood plain. Somewhat poorly drained and poorly drained Fluvaquents and moderately well drained and somewhat excessively drained Udifluvents are included in areas where fast flowing streams enter the unit. Also included are areas of very poorly drained Palms soils and Carlisle soils which have organic materials greater than 16 inches deep. Inclusions make up about 20 percent of the unit.

Important soil properties—

Parent Material: recent alluvium
Permeability: moderately slow or moderate in the surface layer, slow in the subsoil and substratum
Available Water Capacity: high
Soil Reaction: neutral
Surface Runoff: slow
Erosion Hazard: slight
Depth to Seasonal High Water Table: +0.5 to 1.0 foot (Nov-June)
Rooting Zone: restricted by a high water table
Depth to Bedrock: more than 60 inches
Flooding Hazard: frequent, brief to long (Nov-June)

Most areas of this soil are used for woodland or water tolerant bushes and grasses.

This unit is unsuited to cultivated crops and pasture because of flooding and a prolonged seasonal high water table.

Potential productivity of this soil for red maple is moderate. Seedling mortality is high and windthrow

hazard is severe because of the seasonal high water table. Wetness and flooding severely limit the operation of equipment.

Flooding and ponding are the main limitations if this unit is used for dwellings with basements, septic tank absorption fields, or local roads and streets. Slow percolation is also a limitation for septic tank absorption fields. Low bearing strength is also a limitation for local roads and streets. A more suitable site for all of these uses should be selected on a drier soil that does not flood.

This soil has good potential for wetland wildlife habitat.

The capability subclass is Vw.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

The survey area contains about 65,621 acres of prime farmland. That acreage makes up about 12 percent of the total acreage in the survey area. The areas are throughout the county, but many are in major valleys.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

BeB	Bernardston silt loam, 3 to 8 percent slopes
ChB	Charlton loam, 3 to 8 percent slopes
CuA	Copake gravelly silt loam, nearly level
CuB	Copake gravelly silt loam, undulating
CwA	Copake channery silt loam, fan, 0 to 3 percent slopes
CwB	Copake channery silt loam, fan, 3 to 8 percent slopes
DuB	Dutchess silt loam, 3 to 8 percent slopes
Fr	Fredon silt loam (where drained)
GsA	Georgia silt loam, 0 to 3 percent slopes
GsB	Georgia silt loam, 3 to 8 percent slopes
HeA	Haven loam, nearly level
HeB	Haven loam, undulating
KrA	Knickerbocker fine sandy loam, nearly level
KrB	Knickerbocker fine sandy loam, undulating
Ln	Linlithgo silt loam (where drained)
MnA	Massena silt loam 0 to 3 percent slopes (where drained)
MnB	Massena silt loam, 3 to 8 percent slopes (where drained)
Pg	Pawling silt loam
PwB	Pittstown silt loam, 3 to 8 percent slopes
PzA	Punsit silt loam, 0 to 3 percent slopes (where drained)
PzB	Punsit silt loam, 3 to 8 percent slopes (where drained)
Ra	Raynham silt loam (where drained)

Sc	Scio silt loam	UnB	Unadilla silt loam, undulating
SkB	Stockbridge silt loam, 3 to 8 percent slopes	We	Wappinger loam

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed; the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Erosion is a potential hazard on much of the land in the survey area. It is a principal source of sediment, which is a major cause of water pollution. All soils are subject to erosion. Exposed soil surfaces, following cultivation or removal of the vegetative cover, especially on sloping soils, greatly increases the potential for accelerated erosion. On soils susceptible to accelerated erosion, such as Stockbreeder silt loam, 8 to 15 percent slopes, a cropping system that reduces runoff and erosion is needed in combination with other erosion control practices. As used here, cropping system refers to the sequence of crops grown in combination with management that includes minimum tillage or no-till, planting mulch, using crop residues, growing cover crops and green manure crops, and using lime and fertilizer. Other useful practices to reduce erosion are contour farming, terracing, and contour stripcropping. Diversion and grassed waterways help to convey runoff from one area to another in a non-erosive fashion.

The effectiveness of a particular combination of measures differs from one soil to another, but different combinations can be equally effective on the same soil. The local representative of the Natural Resources Conservation Service is available to assist in planning an effective combination of practices to reduce erosion.

Pasture or a grass sod is effective in controlling erosion on all but a few of the soils. A high level of pasture management is needed on some soils to maintain sufficient ground cover to reduce erosion. This includes proper stocking rates, fertilization, rotational grazing, weed and brush control, and careful selection of seeding mixtures. Proper stocking, rotating the livestock from one pasture to another, and providing a

period of time for regrowth of the plants controls grazing. On some soils, it is important to establish pasture plants that require the least amount of renovation to maintain good ground cover and provide adequate forage.

Fertility is another management concern in the survey area. Most soils in the counties need lime or fertilizer or both. The amounts needed depend on the natural content of lime and plant nutrients, which are determined by laboratory analyses of soil samples, on the needs of the crop, and on the level of yield desired. For assistance in getting tests made and interpreted, a Cooperative Extension Agent should be consulted.

The average organic-matter content is about 4 percent in the surface layer of mineral soils in Dutchess County. Nitrogen is released from organic matter, but most of it is in complex organic forms unusable by plants. It is necessary to apply nitrogen fertilizer to supplement nitrogen made available from the soil. Soils in the survey area are naturally low in ability to supply phosphorus. The addition of appropriate amounts of phosphate in the form of fertilizers is essential for good crop eyelids. Most of the soils are also low in potassium supplying power. Timeliness of nitrogen and phosphorus fertilization is important.

Nitrogen may be lost either through leaching from rapidly permeable soils such as Hoosic soils or by denitrification on the less permeable soils such as Rhinebeck soils. Small amounts of nitrogen applied at frequent or timely intervals give the best results. New research findings on fertilization are in current editions of “Cornell Recommends for Field Crops” and “Vegetable Production Recommendations” both prepared by the staff of the New York College of Agriculture at Cornell University. In the absence of soil tests, those references can be used as a guide in determining lime and fertility needs.

Most soils in Dutchess County are fairly high in organic matter. It is important to maintain this high level for good soil tilth and fertility by regular additions of organic matter from animal manure, returning plant residues, sod crops, cover crops, and green manure crops. Tillage tends to reduce organic matter content and break down soil structure. This is especially true if tillage is done when the soil is saturated or if it is too dry.

Drainage is an important management practice on a significant part of the existing or potential farmland in the survey area. On wet soils such as Fredon silt loam, yields of cultivated crops can be increased by artificial drainage. Open ditches or tile drains are used to improve drainage. Drainage on sloping soils is more effective if the ditches or tile lines intercept the water as it moves down slope. When draining with either tile as open ditches, suitable outlets are needed.

Droughtiness or low available water capacity commonly limits plant growth on about 32,000 acres of potential or existing farmland in the survey area. In years with less than normal rainfall an additional 30,000 acres would likely be affected. Sandy and gravelly soils like Hoosic and Knickerbocker soils are droughty and so are soils that are moderately deep to bedrock, like Chatfield soils.

Increasing the organic matter content will help to increase the available water capacity of droughty soils. Using green manure crops, incorporating crop residues into the soil, and adding animal wastes to the soil are measures that build up organic matter levels.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed

because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The acreage of soils in each capability class or subclass is shown in table 7. The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in the yields table.

Woodland Management and Productivity

This section was prepared with assistance provided by the New York State Department of Environmental Conservation Foresters and the Dutchess County Soil and Water Conservation District.

In 1980, approximately 300,000 acres in Dutchess County, or 57 percent of the acreage, was classified as commercial forest (Considine, Frieswyk; 1982). This represents an 8 percent increase over the previous survey in 1968. Commercial forestland is producing or capable of producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization.

Oak timber types cover the greatest area in the county, 143,000 acres. Northern hardwoods cover 110,000 acres, and mainly softwood types cover 44,000 acres. The oak types are generally on drier sites, on southern and western slopes, and on the tops of ridges. The northern hardwood type (beech, birch, and maple) is more common on moister sites and northern and eastern slopes. Of the softwood types, hemlock is common on wet sites, such as along wetlands or drainageways, or on the lower third of the

slopes. The white pine sites are soils with a wide variety of drainage classes, but are mainly on well drained soils and in old crop fields.

The total volume of sawtimber in 1980 in Dutchess County was about 746,800 million board feet, a 46 percent increase since the 1968 survey. This is due to the maturing of the forest stands and the growth from the poletimber size classes into the sawtimber size classes. Of the total, oaks make up the largest volume, about 293 million board-feet; other hardwoods, 225 million board-feet; white pine, 104 million board-feet; maple, 188 million board-feet; hemlock, 28 million board-feet; and other softwoods, 4 million board-feet. The woodlands of Dutchess County are scattered throughout the county.

Table 8 can help woodland owners or forest managers plan the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; *L*, low strength; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, L, and N.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed also are subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 2 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 2 to 6 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 6 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to

which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Recreation

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be

required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountainmahogany, bitterbrush, snowberry, and big sagebrush.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness,

surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant

Figure 11.—A condominium complex in a mostly undeveloped area of the county. The condos are built on Hoosic and Pittstown soils.

increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe (fig. 11).

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and

a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as

shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to

bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 16.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Soil Series and Their Morphology.”

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested is given in table 15.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by

converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture

content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in the table, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each

soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table—that is, perched, apparent, or artesian; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Engineering Properties of Geologic Deposits

The following geologic deposits are in Dutchess County: glacial till, outwash, ice-contact, lacustrine, alluvial, and organic. The engineering properties of each geologic deposit are influenced to a great extent by the mode of deposition, which in turn determines the texture of the material and the internal structure of the landform. Other influences are the position of the deposit on the landscape and the position of the water table. In Dutchess County the geologic deposits are in the following categories: deep till, shallow-to-rock,

stratified coarse-grained, stratified fine-grained, and organic.

Deep till deposits. These are unstratified, highly variable mixtures of all particle sizes ranging from rock fragments to clay. This material was scoured and transported from nearby sources by glacial ice and deposited as a ground moraine or end moraine. Bedrock is generally at a depth of more than 5 feet, but in some small areas this depth to rock is less or there are outcrops of bedrock. The rock and mineral fragments in the soil generally reflect the types of bedrock in an area.

Soils that formed in mixed deep till deposits are those of the Bernardston, Charlton, Dutchess, Georgia, Massena, Pittstown, Punsit, Stockbridge, and Sun series. These soils are the most dense and compact of the soils that formed in unconsolidated deposits in the county. Most of the till has been compacted by glacial ice. Deep till soils range from nearly level to very steep, but most are nearly level or gently sloping. Many landscapes are such that cut and fill earthwork is involved in most construction. The soils are generally provided a stable, relatively incompressible foundation for engineering works. If properly compacted, fill material from these deposits generally provides stable embankments. Steep cut slopes often are subject to surface sloughing and erosion.

Shallow-to-rock deposits

These deposits contain a veneer of glacial till over bedrock. The soil is generally from 6 inches to 3 feet thick, and rock outcrops are common in some areas. The landforms and topography are generally controlled by the bedrock.

The Cardigan and Nassau soils formed in glacial till deposits over shale. The Chatfield, Macomber, and Taconic series formed in glacial till over slate or phyllite bedrock. The Farmington and Galway series soils formed in glacial till over limestone bedrock. The Hollis soils formed in glacial till deposits over granite, schist, and gneiss.

The primary engineering concerns are the underlying bedrock and ground water. Cut and fill earthwork is needed in some areas, but the quantity of fill material is limited by depth to bedrock.

Stratified coarse-grained deposits

These deposits consist of stratified gravel and sand sorted by glacial meltwater and of coarser materials deposited by fluvial action. They are on outwash plains and terraces, ice-contact kames and eskers, beach ridges, and the coarser portions of deltas, lacustrine plains, and flood plains. The material in these deposits is well sorted or poorly sorted, and particle sizes range from cobbles to silt. The deposits are mainly loose and porous, and their permeability is moderately rapid or rapid.

The Copake, Fredon, Halsey, Haven, Hoosic, and Knickerbocker soils formed on gravelly outwash plains and terraces, beach ridges, deltas, kames, eskers, and fans. The Scio and Unadilla soils formed in silty material overlying coarse-grained materials on lake plains. Linlithgo, Pawling, and Wappinger soils are formed in sandy and silty flood-plain deposits.

Coarse-grained deposits generally have relatively high strength and low compressibility. Because of their loose and porous nature, most of these deposits are not highly erodible but are subject to settlement when vibrated. The Linlithgo, Pawling, and Wappinger soils are subject to flooding, and the Halsey soils are subject to ponding.

These deposits of gravel and sand have many uses as a construction material. Depending on gradation, soundness, and plasticity, they are suitable as:

1. Fill material for highway embankments.
2. Fill material for parking areas and developments.
3. Fill material to decrease stress on underlying soils so construction operations can proceed.
4. Subbase for pavements.
5. Wearing surfaces for driveways, parking lots, and some roads.
6. Material for highway shoulders.
7. Free-draining backfill for structures and pipes.
8. Outside shells of dams for impounding water.
9. Slope-protection blankets to drain and help stabilize wet cut slopes.
10. Sources of sand and gravel for general use.

Stratified fine-grained deposits. These deposits consist of lacustrine, fine-grained sediment transported by glacial meltwater and deposited in quiet proglacial lakes and ponds. Some are flood plains on more recent slackwater deposits. The deposits consist of distinct layers or laminations mainly of fine sand and silt- and clay-sized particles.

The Hudson, Kingsbury, Livingston, Rhinebeck, and Vergennes soils formed in deep lake-laid silt and clay deposits. The Canandaigua, Raynham, and Scio soils formed on deep, silty areas of deltas.

Because of their fine texture and high moisture contents, these deposits have low strength. The soils with a large content of fine sand and silt have low compressibility but are highly erodible and susceptible to frost. The alluvial soils are prone to flooding, and the Madalin, Canandaigua, and Birdsall soils are subject to ponding.

The soils that are formed in fine-grained deposits are difficult to use for engineering works, especially the

nearly level, wet soils that are subject to ponding. Sites for embankments and heavy structures or buildings on all soils formed in these finer sediments must be investigated for strength and settlement and for the effects of ground water.

Organic Deposits

These deposits are mainly accumulations of plant remains. In places there are small amounts of mineral soil. Organic deposits are in very poorly drained depressions and bogs covered with water most of the year. Carlisle and Palms soils and Medisaprists and Hydraquents formed in organic material of varying thickness. The soils in organic deposits are unsuitable as foundations for engineering works because they are wet, weak, and highly compressible. Generally the organic material should be removed and replaced with suitable backfill. Filling over organic deposits causes long-term settlement.

Relationship Between Soil Series, Their Parent Material, Landscape Position, and Drainage

Table 18 shows the relationship between parent material, position in the landscape, and drainage for the soils in Dutchess County. First, the soils are grouped based on the type of landscape in which they are found. The types of landscapes in the county are outwash terraces, plains, and alluvial fans; lacustrine plains, till plains; floodplains; swamps and bogs. Next, soils that are on similar landscapes are grouped based on the texture and morphology of the parent material from which they are derived. The soils are further characterized based on their depth to bedrock (shallow, moderately deep, and very deep). Finally, the soils are placed into the proper drainage class. Soils having the same parent material, soil depth, and landscape position but differing in drainage class, form a soil catena. Bernardston, Pittstown, and Punsit are an example of soils that form a catena. Some soils, such as Sun have drainage class, so that the name will appear more than once in the table.

The resulting tabulation will allow one to establish general relationships between the soils in the county. It supplements the sections “Formation of the Soils” and “Engineering Properties of Geologic Deposits.” Detailed information on the morphology and character of each soil is contained in the section “Soil Series and Their Morphology.”

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA 1975). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (USDA 1951). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (USDA 1975). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Bernardston Series

The Bernardston series consists of very deep, well drained, moderately permeable over slowly permeable soils on glaciated uplands. These soils formed in compact glacial till derived mainly from dark gray phyllite, slate, or schist. Slopes range from 3 to 45 percent.

Bernardston soils are near moderately well drained Pittstown soils and somewhat poorly drained Punsit

soils. Pittstown and Punsit soils formed in compact glacial till. Bernardston soils are also mapped near poorly drained and very poorly drained Sun soils. Sun soils do not have a dense substratum.

Typical pedon of Bernardston silt loam, 8 to 15 percent slopes, in the town of Beekman, 1000 feet north of Clapp Hill Road, 1 mile east of the intersection with Schoolhouse Lane, in a field:

Ap—0 to 8 inches; dark brown (l0YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; slightly sticky and slightly plastic; many fine and very fine roots; 10 percent rock fragments; strongly acid; clear smooth boundary.

Bwl—8 to l7 inches; yellowish brown (l0YR 5/4) silt loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; many fine roots; l0 percent rock fragments; strongly acid; clear smooth boundary.

Bw2—l7 to 27 inches; light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; l0 percent rock fragments; strongly acid; abrupt smooth boundary.

Cdl—27 to 37 inches; olive brown (2.5Y 4/4) silt loam; moderate medium platy structure; firm; slightly sticky and slightly plastic; 10 percent rock fragments; strongly acid; diffuse wavy boundary.

Cd2—37 to 80 inches; olive brown (2.5Y 4/4) silt loam; massive; firm; slightly sticky and slightly plastic; 10 percent rock; strongly acid.

The thickness of the solum ranges from l5 to 30 inches and generally is the same as the depth to the dense substratum. The solum is silt loam, loam, or very fine sandy loam in the fine-earth fraction. Rock fragments make up from 0 to 15 percent of the volume of the A horizon and from 5 to 10 percent of the volume of the B and C horizons. The soil ranges from very strongly acid to moderately acid, unless limed.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. Structure is weak or moderate, fine or medium granular or weak fine or medium subangular blocky. Consistence is very friable or friable.

Some pedons have a BC horizon with characteristics similar to the lower part of the Bw.

The Cd horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam, loam, or very fine sandy loam in the fine-earth fraction. Structure is weak or moderate medium platy, or the horizon is massive. Consistence is firm or very firm.

Canandaigua Series

The Canandaigua series consists of very deep, poorly drained and very poorly drained, moderately slow permeable soils on glacial lake plains. These soils formed in silty glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Canandaigua soils are near well drained Bernardston soils, moderately well drained Pittstown soils, somewhat poorly drained Punsit soils, and poorly drained and very poorly drained Sun soils. Bernardstown, Pittstown, and Punsit soils formed in compact glacial till. Sun soils formed in glacial till but lack a dense substratum. Canandaigua soils are similar to poorly drained Livingston soils. Canandaigua soils are not as clayey as Livingston soils.

Typical pedon of Canandaigua silt loam, neutral substratum, in the town of Wappinger, .2 miles east of Degarmo Hill Road, .5 miles north of the intersection with County Route 93:

Ap—0 to 6 inches; very dark grayish brown (2.5Y 3/2), grayish brown (2.5Y 5/2) dry, silt loam; weak medium granular structure; friable; many fine and common medium roots; slightly acid; abrupt smooth boundary.

Bg1—6 to 21 inches; dark gray (2.5Y 4/0) silt loam; many medium prominent dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; friable; many fine common medium roots; slightly acid; clear smooth boundary.

Bg2—21 to 31 inches; grayish brown (10YR 5/2) silt loam; common fine distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; friable; slightly acid; gradual smooth boundary.

BCg—31 to 40 inches; gray (10YR 5/1) silty clay loam; many fine prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; neutral; gradual irregular boundary.

C—40 to 72 inches; gray (10YR 5/1) strata of silt loam and silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; massive; friable; neutral.

The thickness of the solum ranges from 20 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments are commonly absent, but range up to 10 percent above a depth of 40 inches and up to 30 percent below a depth of 40 inches.

The Ap or A horizon has hue of 5YR to 2.5Y, or is

neutral, value of 2 or 3, and chroma of 0 to 2. Texture is silt loam, very fine sandy loam, loam, or fine sandy loam. Structure is weak to strong, granular or subangular blocky structure. In some pedons, O horizons range from a trace to 6 inches thick overlying an A horizon. Reaction ranges from moderately acid to mildly alkaline.

The Bg horizon has hue of 5YR to 5GY, or is neutral, value of 4 to 7, and chroma of 0 to 2, with more than 20 percent (common or many) high chroma mottles. Texture is silt loam, very fine sandy loam, or silty clay loam, with thin subhorizons in some pedons having lighter or heavier textures. Structure is very fine to coarse, subangular or angular blocky, either primary or within coarse or very coarse prisms. Consistence is friable to very firm. Reaction is moderately acid to neutral.

The BC horizon is similar to the Bg horizon except the structure is usually weaker and can include a platy structure.

The C horizon has hue of 5YR to 5G or is neutral, value of 3 to 6, and chroma of 0 to 3. Texture consists of thin strata ranging from fine sand to silty clay to a depth of at least 40 inches. Below a depth of 40 inches some pedons have a loamy, nonstratified 2C and 3C horizons. Reaction is moderately acid to neutral.

Cardigan Series

The Cardigan series consists of moderately deep, well drained, moderately permeable soils on bedrock controlled glaciated uplands. These soils formed in loamy glacial till over folded, acid shale bedrock. Slopes are complex and irregular and range from 1 to 45 percent.

Cardigan soils are mapped in complexes with Nassau or Dutchess soils, and are near areas of Bernardston, Dutchess, or Stockbridge soils. Cardigan soils are moderately deep with bedrock at 20 to 40 inches. Nassau soils are shallow with bedrock at 10 to 20 inches. Dutchess, Bernardston, and Stockbridge soils are all very deep. Cardigan soils are in landscape settings similar to Macomber soils, but Macomber soils have more rock fragments, are over phyllite or schist bedrock, and have a mean annual soil temperature less than 47 degrees Fahrenheit.

Typical pedon of Cardigan channery silt loam, in an area of Dutchess-Cardigan complex, hilly, rocky, in the town of Pleasant Valley, 950 feet west of Malone Road, .25 miles north of the intersection with County Route 115:

Ap—0 to 8 inches; dark brown (10YR 3/3) channery silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; very friable; few fine roots; 25 percent rock fragments; slightly acid (limed); abrupt smooth boundary.

Bw1—8 to 12 inches; yellowish brown (10YR 5/6) channery silt loam; weak medium subangular blocky structure; friable; few fine roots; 25 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—12 to 20 inches; yellowish brown (10YR 5/6) channery loam; weak fine subangular blocky structure; friable; few fine roots; 25 percent rock fragments; strongly acid; clear wavy boundary.

Bw3—20 to 30 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; 30 percent rock fragments; strongly acid; abrupt wavy boundary.

R—30 inches; very dark gray, folded shale bedrock.

The thickness of the solum ranges from 20 to 36 inches. Depth to bedrock ranges from 20 to 40 inches. Rock fragments make up from 15 to 35 percent of the volume of the A horizon, 0 to 30 percent of the volume of the B horizon, and 10 to 40 percent of the volume of the C horizon, where present. Reaction ranges from very strongly acid to moderately acid, unless limed.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 1 to 4. Texture is loam or silt loam in the fine-earth fraction.

The E horizon, where present, has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 or 2. Texture is similar to the A horizon.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. Texture is loam, silt loam, or very fine sandy loam in the fine-earth fraction.

The BC horizon, where present, has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. Texture is similar to the Bw horizon.

The C horizon, where present, has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. Structure is weak granular or platy, or the horizon is massive. Consistence ranges from very friable to firm. Texture is loam, silt loam, fine sandy loam, or very fine sandy loam in the fine-earth fraction.

The bedrock is hard folded shale.

Carlisle Series

The Carlisle series consists of very deep, very poorly drained, moderately slow to moderately rapid permeable soils. These soils occur in swampy areas in troughs formed by folded bedrock as well as broad impounded areas on glaciated uplands, outwash plains, and flood plains. They formed in highly decomposed organic material. Slopes range from 0 to 2 percent.

Carlisle soils are similar to Palms soils. The organic

layers in Carlisle soils have a total thickness greater than 51 inches over mineral soil material. The organic layers in Palms soils are 16 to 51 inches thick over mineral soil material.

Typical pedon of Carlisle muck, in the town of Pine Plains, .5 miles east of Halcyon Lake, .5 miles south of Briarcliff Lane, .8 miles west of the intersection with State Route 82, in a large swampy area:

Oa1—0 to 12 inches; black (10YR 2/1) muck; 10 percent fibers, 0 percent rubbed; weak coarse granular structure; very friable; slightly acid; abrupt wavy boundary.

Oa2—12 to 32 inches; black (10YR 2/1) muck; 30 percent fibers, 10 percent rubbed; massive; very friable; slightly acid; gradual wavy boundary.

Oa3—32 to 80 inches; black (10YR 2/1) muck; 30 percent fibers, 15 percent rubbed; massive; very friable; neutral.

The thickness of the organic deposits is greater than 51 inches. The reaction throughout the profile ranges from very strongly acid to mildly alkaline. Fibrous material and wood fragments range from 0 to 30 percent throughout the profile.

The surface tier is 10YR 2/1 or 5YR 2/1 and is dominantly sapric material.

The subsurface tier has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 3. It is dominantly sapric material.

The bottom tier has colors similar to the subsurface tier. The amounts of woody and herbaceous fibers vary; however, herbaceous fibers generally constitute the greater proportion. It is dominantly sapric material, but some pedons have thin layers of hemic material. The combined thickness of these hemic layers is less than 10 inches. This tier commonly is massive, but some pedons have weak coarse blocky or thick platy structure.

Charlton Series

The Charlton series consists of very deep, well drained, moderate or moderately rapid permeable soils on glaciated uplands. These soils formed in acid, loamy glacial till, high in crystalline rock fragments. Slopes range from 1 to 45 percent.

Charlton soils are often mapped with or near Chatfield and Hollis soils. Charlton soils are very deep to bedrock. Chatfield soils are moderately deep and have bedrock at 20 to 40 inches. Hollis soils are shallow with a depth to bedrock ranging from 10 to 20 inches. In places, Charlton soils are also near moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils.

Typical pedon of Charlton loam, 3 to 8 percent slopes, in the town of Pawling, 350 feet west of County Route 66, .65 miles north of the northern intersection with County Route 67:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6.2) dry; weak fine and medium granular structure; friable; many fine roots; 10 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—8 to 12 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak coarse subangular blocky structure; friable; common fine roots; 20 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw2—12 to 26 inches; olive brown (2.5Y 4/4) gravelly loam; weak coarse subangular blocky structure; friable; common fine roots; 20 percent rock fragments; strongly acid; clear wavy boundary.

BC—26 to 30 inches; light olive brown (2.5Y 5/4) gravelly loam; weak coarse subangular blocky structure; friable; common fine roots; 25 percent rock fragments; strongly acid; clear irregular boundary.

C1—30 to 39 inches; dark grayish brown (2.5Y 4/2) gravelly loam; massive; friable; few fine roots; 25 percent rock fragments; moderately acid; clear wavy boundary.

C2—39 to 72 inches; olive (5Y 4/3) gravelly loam; massive; friable; few fine roots; 25 percent rock fragments; moderately acid.

The thickness of the solum ranges from 20 to 38 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 15 percent of the volume of the surface layer, from 5 to 35 percent of the volume above a depth of 40 inches, and from 5 to 50 percent of the volume below 40 inches. Rock fragments are dominantly schist, gneiss or granite. Reaction ranges from very strongly acid to moderately acid, unless limed.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 and chroma of 2 to 4. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable.

The upper part of the B horizon has hue of 7.5YR or 10YR and the lower part has hue of 10YR or 2.5Y. Value is 4 to 6 and chroma is 4 to 6 throughout. Texture is sandy loam, fine sandy loam, or loam in the fine-

earth fraction. The horizon is massive, or structure is weak granular or subangular blocky. Consistence is friable or very friable.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. The horizon is massive. Consistence is very friable, friable, or firm.

Chatfield Series

The Chatfield series consists of moderately deep, well drained and somewhat excessively drained, moderate or moderately rapid permeable soils on bedrock controlled glaciated uplands. These soils formed in glacial till deposits over highly fractured, folded and tilted granite, schist, or gneiss bedrock. Slopes are complex and irregular and range from 1 to 70 percent.

Chatfield soils are in complexes with rock outcrop, Charlton soils, and Hollis soils. Chatfield soils are moderately deep and have bedrock at 20 to 40 inches. Hollis soils are shallow and have bedrock at 10 to 20 inches. Charlton soils are very deep. In places, Chatfield soils are also near moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Chatfield soils are better drained and shallower to bedrock than Georgia, Massena, Sun, and Palms soils. Chatfield soils are in landscape settings similar to Macomber soils, but are in areas that have a warmer soil temperature.

Typical pedon of Chatfield fine sandy loam, in an area of Chatfield-Hollis complex, hilly, very rocky, in the town of Dover, .7 miles south of State Route 55, 200 feet west of the intersection with Duell Road, in a wooded area:

Ap—0 to 9 inches; dark brown (10YR 3/3) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many fine few medium and coarse roots; 5 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—9 to 15 inches; olive brown (2.5Y 4/4) loam; weak fine and medium subangular blocky structure; very friable; many fine roots; 5 percent rock fragments; moderately acid; abrupt wavy boundary.

Bw2—15 to 23 inches; olive brown (2.5Y 4/4) loam; weak medium subangular blocky structure; friable; common fine roots; 5 percent rock fragments; moderately acid; abrupt wavy boundary.

BC—23 to 27 inches; dark grayish brown (2.5Y 4/2) gravelly fine sandy loam; week medium and course subangular blocky structure; friable; few fine roots; 20 percent rock fragments; strongly acid; abrupt wavy boundary.

C—27 to 30 inches; dark grayish brown (2.5Y 4/2) gravelly fine sandy loam; massive; firm; 20 percent rock fragments; strongly acid; abrupt wavy boundary.

R—30 inches; folded micaceous schist and granitic bedrock.

The thickness of the solum ranges from 16 to 36 inches. Depth to bedrock ranges from 20 to 40 inches. Rock fragments make up from 5 to 15 percent of the volume of the A horizon, and from 5 to 35 percent of the volume of the B and C horizons.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. Texture is loam, very fine sandy loam, fine sandy loam, or sandy loam in the fine-earth fraction. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable. Reaction ranges from very strongly acid to moderately acid, unless limed.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6. Texture is silt loam, loam, very fine sandy loam, fine sandy loam, or sandy loam in the fine-earth fraction. Structure is fine, medium, or coarse subangular blocky or granular. Consistence is friable or very friable. Reaction ranges from very strongly acid to moderately acid.

The BC horizon, where present, has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is loam, very fine sandy loam, fine sandy loam, or sandy loam in the fine-earth fraction. Consistence is friable or firm. Reaction ranges from very strongly acid to moderately acid.

The C horizon, where present, has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam, very fine sandy loam, fine sandy loam, or sandy loam in the fine-earth fraction. The horizon is massive, or the structure is weak medium or thick platy. Consistence is friable or firm.

The bedrock is schist, granite, or gneiss. In places, it is massive, but it dominantly has vertical and horizontal fractures in the upper 12 to 30 inches.

Copake Series

The Copake series consists of deep, well drained, moderate or moderately rapid permeable over very rapid permeable soils on outwash plains and terraces. These soils formed in glaciofluvial deposits high in limestone fragments. Slopes range from 0 to 45 percent. Slopes from 0 to 3 percent and 25 to 45 percent are simple and smooth, and slopes from 3 to 30 percent are complex and irregular.

Copake soils are on landscape settings similar to somewhat excessively drained Hoosic soils. Copake soils are formed from outwash deposits dominated by limestone and they have a loamier surface than acid Hoosic soils. In places, Copake soils are near poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils.

Typical pedon of Copake gravelly silt loam, nearly level, in the town of Amenia, 100 feet east of State Route 22, 400 feet north of the southern intersection with County Route 105:

Ap—0 to 6 inches; dark brown (10YR 3/3) gravelly silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; many fine and medium roots; 15 percent rock fragments; neutral; abrupt smooth boundary.

Bw1—6 to 8 inches; dark yellowish brown (10YR 4/6) gravelly loam; weak fine granular structure; very friable; many fine and medium roots; 30 percent rock fragments; neutral; abrupt smooth boundary.

Bw2—8 to 24 inches; olive brown (2.5Y 4/4) and yellowish brown (10YR 5/4) gravelly loam; weak fine subangular blocky structure; friable; common fine and few medium roots; 30 percent rock fragments; neutral; abrupt smooth boundary.

Bw3—24 to 36 inches; light olive brown (2.5Y 4/4) and yellowish brown (10YR 5/4) gravelly loam; weak fine subangular blocky structure; friable; common fine and few medium roots; 30 percent rock fragments; neutral; abrupt smooth boundary.

2C1—36 to 42 inches; light olive brown (2.5Y 5/4) very gravelly loamy coarse sand; single grain; loose; 50 percent rock fragments; neutral; clear irregular boundary.

2C2—42 to 80 inches; light olive brown (2.5Y 5/4) very gravelly loamy coarse sand; single grain; loose; 50 percent rock fragments; moderately alkaline; slightly effervescent.

The thickness of the solum ranges from 20 to 40 inches and typically corresponds to the depth to sand and gravel. Rock fragments make up from 15 to 35 percent of the volume of the A horizon, from 5 to 35 percent of the volume of the B horizon, and from 5 to 70 percent of the volume of the substratum. Reaction ranges from very strongly acid to neutral in the A horizon, strongly acid to neutral in the B horizon, and slightly acid to moderately alkaline in the 2C horizon. Depth to carbonates is greater than 40 inches.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam, loam, or fine sandy loam in the fine-earth fraction. Structure is weak or moderate granular. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 3 to 8. Texture is silt loam, loam, or fine sandy loam in the fine-earth fraction. It has weak granular or weak subangular blocky structure, or the horizon is massive. Consistence is friable or very friable.

The 2C horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 6. Texture is loamy fine sand, loamy sand, loamy course sand, fine sand, sand, or coarse sand in the fine-earth fraction.

Dutchess Series

The Dutchess series consists of very deep, well drained, moderately permeable soils on glaciated uplands. These soils formed in loamy glacial till high in slate and shale fragments. Slopes range from 1 to 30 percent.

Dutchess soils are often mapped with or near Cardigan and Nassau soils. Dutchess soils are very deep to bedrock. Cardigan soils are moderately deep and have bedrock at 20 to 40 inches. Nassau soils are shallow and have bedrock at 10 to 20 inches. In places, Dutchess soils are also near moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils.

Typical pedon of Dutchess silt loam, in an area of Dutchess-Cardigan complex, undulating, rocky, in the town of Red Hook, 500 feet southeast of Oriole Mills Road, 800 feet east of the intersection with Pells Road:

A—0 to 8 inches; dark brown (10YR 3/3) silt loam, light grayish brown (10YR 6/2) dry; weak fine granular structure; friable; many fine and few coarse roots; 5 percent rock fragments; neutral (limed); clear smooth boundary.

Bw1—8 to 17 inches; yellowish brown (10YR 5/6) silt loam; weak medium platy parting to weak fine subangular blocky structure; friable; common fine and medium and few coarse roots; 5 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—17 to 28 inches; dark yellowish brown (10YR 4/4) silt loam; medium moderate subangular blocky structure; friable; few fine roots; 10 percent rock fragments; moderately acid; gradual wavy boundary.

C1—28 to 46 inches; yellowish brown (10YR 5/4) channery silt loam; weak coarse subangular blocky

structure; friable; few roots; 20 percent rock fragments; moderately acid; clear wavy boundary.

C2—46 to 86 inches; light olive brown (2.5Y 5/4) channery silt loam; massive; firm; 20 percent rock fragments; moderately acid.

The thickness of the solum ranges from 20 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 15 percent of the volume of the A horizon, 5 to 35 percent of the volume of the B horizon, and 20 to 45 percent of the volume of the C horizon. Reaction ranges from very strongly acid to moderately acid in the solum and strongly acid to slightly acid in the substratum.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or 3. Texture is loam or silt loam in the fine-earth fraction.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. Texture is loam or silt loam in the fine-earth fraction.

The upper part of the B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The lower part of the B horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 6. Texture is loam or silt loam in the fine-earth fraction.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam, loam, very fine sandy loam, fine sandy loam, or sandy loam in the fine-earth fraction.

Farmington Series

The Farmington series consists of shallow, well drained to somewhat excessively drained, moderately permeable soils on bedrock controlled glaciated uplands. These soils formed in thin glacial till deposits over limestone bedrock. Slopes are complex and irregular and range from 1 to 65 percent.

Farmington soils are in complexes with rock outcrop, Galway soils, and Stockbridge soils. Farmington soils are shallow with bedrock at 10 to 20 inches. Galway soils are moderately deep with bedrock 20 to 40 inches. Stockbridge soils are very deep. Farmington soils are in landscape settings similar to Nassau and Hollis soils. Farmington soils are underlain by limestone. Nassau soils are underlain by folded shale. Hollis soils are underlain by schist, granite, or gneiss.

Typical pedon of Farmington loam in an area of Farmington-Galway complex, rolling, very rocky, in the town of Amenia, .25 miles west of Sharon Station Road, 0.5 miles north of the intersection with state Route 343:

Ap—0 to 7 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many fine and very fine roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

Bw—7 to 15 inches; light olive brown (2.5Y 5/6) very fine sandy loam; weak medium subangular blocky parting to weak fine granular structure; very friable; common fine and very fine roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

R—15 inches; hard gray dolomitic limestone bedrock; some rock fragments at the surface of the bedrock; slightly effervescent.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Rock fragments make up from 5 to 15 percent of the volume of the A horizon and from 5 to 35 percent of the volume of the subsoil. Reaction ranges from strongly acid to slightly acid in the A horizon and from moderately acid to mildly alkaline in the B horizon, unless limed. Free carbonates are in the fine-earth fraction above bedrock in some pedons.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Texture is fine sandy loam, loam, or silt loam in the fine-earth fraction.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. Texture is very fine sandy loam, fine sandy loam, loam, or silt loam in the fine earth fraction. Some pedons have high chroma mottles in the lower part of the B horizon. Structure is weak fine or medium subangular blocky or weak fine granular. Consistence is very friable or friable.

The bedrock is hard gray limestone.

Fluvaquents

Fluvaquents consist of very deep, somewhat poorly drained to very poorly drained soils on the most actively flooded areas of flood plains along major and secondary streams. These soils formed in recent alluvial deposits. Slopes range from 0 to 3 percent.

Fluvaquents are mapped in a complex with better-drained Udifluvents. They are commonly near well drained Wappinger soils, moderately well drained Pawling soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Fluvaquents have little or no soil profile development.

Fluvaquents are in the part of the flood plain where intermittent scouring and redeposition of sediments cause the composition and properties to differ from place to place. Because of the wide range in texture and other characteristics, a typical pedon of Fluvaquents is not provided.

The thickness of the surface layer and solum is

generally 2 to 12 inches. The depth to bedrock is greater than 60 inches. Rock fragments including gravel, channers, and cobbles make up from 0 to 50 percent of the volume. Reaction ranges from strongly acid to mildly alkaline. The organic matter content decreases irregularly with depth and is greater than 0.4 percent at a depth of 50 inches.

The surface layer has hue of 10YR, 2.5Y, or 5Y, value of 2 or 3, and chroma of 0 or 1. Texture is stratified layers of sandy loam, loam, or silt loam in the fine-earth fraction.

The substratum has hue of 10YR, 2.5Y, or 5Y, value of 3, 4, 5, or 6, and chroma 0, 1, or 2. Mottles are commonly present. Texture is stratified layers of sandy loam, silt loam, loam or silty clay loam in the fine-earth fraction. Some pedons have thin strata of sand or loamy sand.

Fredon Series

The Fredon series consists of very deep, somewhat poorly drained, moderate to moderately slow permeable over rapidly permeable soils on outwash plains. These soils formed in glaciofluvial deposits derived from limestone, sandstone, or shale. Slopes range from 0 to 3 percent.

Fredon soils are near somewhat excessively drained Hoosic soils and poorly drained and very poorly drained Halsey soils. In places, Fredon soils are also near somewhat excessively drained Knickerbocker soils and well drained Haven and Copake soils.

Typical pedon of Fredon silt loam, in the town of Pine Plains, 775 feet west of Strever Farm Road, 1000 feet south of the intersection with Bethel Cross Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 6/1) dry; moderate fine granular structure; friable; many fine roots; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

Bg1—9 to 14 inches; light olive gray (5Y 6/2) silt loam; many medium distinct light olive brown (2.5Y 5/6) mottles; moderate medium subangular blocky structure; firm in place, friable; common fine roots; 5 percent rock fragments; neutral; abrupt wavy boundary.

Bg2—14 to 22 inches; gray (5Y 5/1) very fine sandy loam; many medium distinct light olive brown (2.5Y 5/6) mottles; weak coarse subangular blocky structure; friable; common fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

Bg3—22 to 29 inches; gray (5Y 5/1) loam; many (greater than 40 percent) medium distinct light olive brown (2.5Y 5/4) mottles; moderate coarse subangular blocky structure; friable; few fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

BC—29 to 31 inches; gray (5Y 5/1) gravelly loam; common medium distinct light olive brown (2.5Y 5/4) mottles; weak coarse subangular blocky structure; friable; 20 percent rock fragments; neutral; abrupt wavy boundary.

2C—31 to 70 inches; brown (10YR 4/3) very gravelly loamy fine sand; single grain; loose; 35 percent rock fragments; neutral; very slightly effervescent.

The thickness of the solum ranges from 22 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 2 to 15 percent of the volume in the A horizon, 2 to 35 percent of the volume of the B horizon, and from 10 to 60 percent of the volume of the BC and C horizons. Unless limed, reaction ranges from moderately acid to neutral in the solum, and from slightly acid to moderately alkaline in the substratum.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. Texture is loam, fine sandy loam, very fine sandy loam, or silt loam in the fine-earth fraction.

The Bg and BC horizons have hue of 7.5YR to 5Y, value of 4 to 6, chroma of 1 to 4, and they are mottled. Texture is loam, fine sandy loam, very fine sandy loam, or silt loam in the fine-earth fraction. Structure is weak or moderate subangular blocky, or weak coarse prismatic or platy. Consistence is very friable, friable, or firm.

The 2C horizon has hue of 5YR to 5Y, value of 3 to 6, and chroma of 0 to 4. Texture is sand, fine sand, loamy sand or loamy fine sand in the fine-earth fraction, and is usually stratified.

Galway Series

The Galway series consists of moderately deep, well drained and moderately well drained, moderately permeable soils on bedrock controlled glaciated uplands. These soils formed in glacial till deposits over limestone bedrock. Slopes are complex and irregular and range from 1 to 45 percent.

Galway soils are mapped with or near Farmington and Stockbridge soils. Galway soils are moderately deep with bedrock at 20 to 40 inches. Farmington soils are shallow with bedrock at 10 to 20 inches. Stockbridge soils are very deep. In places, Galway soils are also near moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils.

Typical pedon of Galway gravelly loam, in an area of Galway-Farmington complex, undulating, rocky, in the town of Northeast, .25 miles west of State Route 361,

.35 miles southeast of the intersection with County Route 61:

Ap—0 to 6 inches; dark brown (10YR 3/3) gravelly loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; 15 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—6 to 10 inches; dark yellowish brown (10YR 4/4) gravelly loam; moderate fine subangular blocky structure; friable; many fine roots; 15 percent rock fragments; neutral; clear wavy boundary.

Bw2—10 to 15 inches; dark brown (10YR 4/3) gravelly loam; moderate fine and medium subangular blocky structure; friable; many fine roots; 20 percent rock fragments; neutral; abrupt smooth boundary.

Bw3—15 to 30 inches; dark brown (10YR 3/3) gravelly loam; weak medium and course subangular blocky structure; friable; common fine roots; 25 percent rock fragments; neutral; abrupt irregular boundary.

C—30 to 31 inches; dark brown (10YR 3/3) gravelly loam; massive; friable; many fine roots; 30 percent rock fragments; mildly alkaline; slightly effervescent; abrupt irregular boundary.

R—31 inches; white (10YR 8/1) limestone bedrock.

The thickness of solum ranges from 18 to 30 inches and depth to carbonates ranges from 14 to 40 inches. Depth to bedrock ranges from 20 to 40 inches. Rock fragments make up from 15 to 35 percent of the volume of the A horizon, 3 to 35 percent of the volume of the B horizon, and 10 to 70 percent of the volume of the C horizon. Reaction ranges from moderately acid to neutral in the A horizon, from moderately acid to mildly alkaline in the B horizon, and is mildly alkaline or moderately alkaline in the C horizon.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Texture is silt loam or loam in the fine-earth fraction. Structure is moderate fine to coarse granular or moderate fine or medium subangular blocky. Consistence is very friable or friable.

The Bw horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 3 to 6. Faint or distinct mottles with chroma higher than 2 occur in the lower part of some pedons. Texture is silt loam, loam, or fine sandy loam in the fine-earth fraction. Structure is weak or moderate fine through coarse subangular blocky. Consistence is friable or firm.

The BC horizon, where present, is similar to the Bw, but it has free carbonates and chroma as low as 2.

The C horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4; if chroma is 2, value is 4 or more. Texture is silt loam, fine sandy loam, or sandy loam in the fine-earth fraction. Consistence is friable or firm. It is calcareous in some part.

The bedrock is limestone.

Georgia Series

The Georgia series consists of very deep, moderately well drained, moderately permeable over slowly permeable soils on glaciated uplands. These soils formed in loamy glacial till. Slopes range from 0 to 15 percent.

Georgia soils are near well drained Stockbridge soils, somewhat poorly drained Massena soils, and poorly and very poorly drained Sun soils. In places, Georgia soils are also near well drained and somewhat excessively drained Chatfield soils, well drained Dutchess, Charlton, and Cardigan soils, and well drained and moderately well drained Galway soils. Georgia soils are not as well drained as Dutchess and Charlton soils. Georgia soils are deeper than Chatfield, Cardigan, and Galway soils and not as well drained. Georgia soils are formed in landscape settings and materials similar to Pittstown soils, but Pittstown soils have a dense substratum.

Typical pedon of Georgia silt loam, 3 to 8 percent slopes, in the town of Amenia, 500 feet south of county Route 2, .2 miles northeast of the intersection with Clark Hill Road:

Ap—0 to 8 inches; very dark brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

Bw1—8 to 17 inches; olive brown (2.5Y 4/4) loam; moderate medium subangular blocky structure; friable; many fine roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

Bw2—17 to 21 inches; olive brown (2.5Y 4/4) loam; common fine distinct grayish brown (2.5Y 4/2) mottles; weak medium subangular blocky structure; friable; few roots; 10 percent rock fragments; neutral; clear wavy boundary.

Bw3—21 to 27 inches; olive brown (2.5Y 4/4) gravelly fine sandy loam; many course distinct gray (5Y 5/1) mottles; weak medium subangular blocky structure; friable; common fine roots; 15 percent rock fragments; neutral; clear wavy boundary.

C1—27 to 38 inches; olive (5Y 5/3) gravelly fine sandy loam; common medium faint gray (5Y 5/2) mottles; massive; friable; 20 percent rock fragments; neutral; clear wavy boundary.

C2—38 to 80 inches; olive (5Y 5/3) gravelly fine sandy loam; common fine faint olive gray (5Y 5/2) and

olive (5Y 5/4) mottles; massive; firm to friable; 20 percent rock fragments; neutral; very slightly effervescent below 50 inches.

The thickness of the solum ranges from 16 to 32 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 15 percent of the volume of the A horizon and from 0 to 55 percent of the volume of the B and C horizons. Rock fragments consist mainly of weathered limestone, shale, and slate. Reaction ranges from strongly acid to neutral throughout the soil. Depth to free carbonates is greater than 40 inches.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Texture is loam or silt loam in the fine-earth fraction.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture is fine sandy loam, loam, or silt loam in the fine-earth fraction.

The BC horizon, where present, has hue of 10YR to 5Y, value of 4 or 5, and chroma of 3 or 4. Texture is fine sandy loam, loam, or silt loam in the fine-earth fraction.

The C horizon is neutral or has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 4. Texture is fine sandy loam, loam, or silt loam in the fine-earth fraction.

Halsey Series

Halsey series consists of very deep, poorly drained and very poorly drained, moderate or moderately rapid permeable over rapidly permeable soils on outwash plains. These soils formed in glaciofluvial deposits. Slopes range from 0 to 3 percent.

Halsey soils are near somewhat excessively drained Hoosic soils and somewhat poorly drained Fredon soils. In places, Halsey soils are also near well drained Copake, Knickerbocker, and Haven soils.

Typical pedon of Halsey mucky silt loam, in the town of Poughkeepsie, 250 feet north of Spackenkill Road, about .4 miles west of the intersection with Route 376:

Ap—0 to 9 inches; black (10YR 2/1) mucky silt loam, gray (10YR 5/1) dry crushed; weak fine granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

Bg1—9 to 19 inches; gray (5Y 5/1) silt loam; common fine distinct olive (5Y 5/6) mottles; weak fine subangular blocky structure; slightly sticky; 5 percent rock fragments; neutral; abrupt wavy boundary.

Bg2—19 to 29 inches; gray (N 5/) gravelly loam; many medium and coarse distinct light olive brown (2.5Y 5/4) mottles; weak coarse subangular blocky structure; slightly sticky; 15 percent rock fragments; neutral; clear wavy boundary.

BCg—29 to 33 inches; dark gray (N 4/) gravelly sandy loam; weak coarse subangular blocky structure; nonsticky; 30 percent rock fragments; neutral; clear wavy boundary.

2C—33 to 72 inches; very dark gray (N 3/) very gravelly loamy sand; single grain; loose; 50 percent rock fragments; neutral.

The thickness of the solum ranges from 20 to 40 inches and varies widely within short horizontal distances. The depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 15 percent of the volume of the A horizon, 0 to 35 percent of the volume of the B horizon, and 10 to 60 percent of the volume of the C horizon. Reaction ranges from moderately acid to neutral in the solum and slightly acid to moderately alkaline in the substratum. It is calcareous at some depth below 30 inches.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Texture is fine sandy loam, very fine sandy loam, loam, silt loam, or the mucky analogues in the fine-earth fraction. Structure is weak fine or moderately granular or very weak fine subangular blocky.

The E horizon, where present, has hue of 10YR to 5Y, value of 5 or 6, and chroma of 0 or 1. Texture is fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction. Structure is platy, prismatic, or subangular blocky. Consistence is friable or firm when moist and very hard or hard when dry.

The B horizon has hue of 10YR, 2.5Y to 5BG, or neutral, value of 4 to 6, and chroma of 0 to 2, and is mottled. Texture is fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction. Structure is subangular blocky or platy. Consistence is friable or firm and hard or very hard.

The BC horizon is similar to the B horizon except the texture is also allowed to be sandy loam, fine sandy loam, or loamy fine sand.

The C horizons have hue of 10YR to 5Y, or neutral, value of 3 to 6, and chroma of 0 to 2. Chroma of 3 or 4 is also allowed below a depth of 30 inches. Texture is sand, fine sand, loamy sand, or loamy fine sand in the fine-earth fraction. Texture of sandy loam or fine sandy loam is also allowed below a depth of 40 inches and it is usually stratified. Consistence is loose, very friable, friable, or firm.

Haven Series

The Haven series consists of deep, well drained, moderately permeable over very rapidly permeable soils on outwash plains and terraces. These soils

formed in glaciofluvial deposits of mixed mineralogy. Slopes are complex and irregular and range from 0 to 6 percent.

Haven soils are on landscape settings similar to Knickerbocker soils and somewhat excessively drained Hoosic soils. Haven soils are less sandy throughout than Knickerbocker soils. Haven soils have a loamier surface than Hoosic soils. In places, Haven soils are also near somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils.

Typical pedon of Haven loam, nearly level, in the town of LaGrange, about 775 feet west of Sleight-Plass Road, about .25 miles north of the intersection with Acorn Drive, in a wooded area:

Ap—0 to 7 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; moderate fine and very fine granular structure; very friable; many fine roots; 5 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—7 to 12 inches, dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; very friable; many fine roots and few medium roots; 10 percent rock fragments; very strongly acid; abrupt wavy boundary.

Bw2—12 to 19 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak medium and fine subangular blocky structure; friable; common fine roots; 15 percent rock fragments; very strongly acid; clear wavy boundary.

BC—19 to 23 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 25 percent rock fragments; strongly acid; clear wavy boundary.

2C1—23 to 29 inches; brown (10YR 4/3) very gravelly sand; single grained; loose; few fine roots; 45 percent rock fragments, dominantly fine gravel; strongly acid; gradual wavy boundary.

2C2—29 to 72 inches; brown (10YR 4/3) very gravelly sand; single grained; loose; 50 percent rock fragments, dominantly medium gravel; moderately acid.

The thickness of the solum and depth to the lithologic discontinuity range from 18 to 36 inches. Rock fragments make up 0 to 15 percent of the volume of the A and Bw horizons, 0 to 35 percent of the volume of the BC horizon, and 10 to 65 percent of the volume of the 2C horizon. Reaction ranges from very strongly acid to moderately acid.

Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. The A horizon is also allowed to have value of 2 and chroma of 1. Texture is loam, silt loam, or very fine sandy loam. Structure is weak or moderately granular. Consistence is friable or very friable. Some pedons have a thin E horizon much like the A except the value is 4 to 6.

The Bw horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture is loam, silt loam, or very fine sandy loam in the fine-earth fraction. Structure is weak fine or medium subangular blocky. Consistence is very friable or friable.

The BC horizon is similar the Bw horizon except that the texture is also allowed to be sandy loam, and it is also allowed to be massive.

The 2C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. Texture is loamy fine sand, loamy sand, fine sand, or sand in the fine-earth fraction.

Hollis Series

The Hollis series consists of shallow, well drained and somewhat excessively drained, moderately to moderately rapid permeable soils on bedrock controlled glaciated uplands. These soils formed in glacial till deposits over highly fractured, folded and tilted granite, schist, and gneiss. Slopes are complex and irregular and range from 1 to 70 percent.

Hollis soils are mapped with or near rock outcrop and Chatfield and Charlton soils. Hollis soils are shallow with bedrock at 10 to 20 inches. Chatfield soils are moderately deep with bedrock at 20 to 40 inches. Charlton soils are very deep. In places, Hollis soils are also near poorly drained and very poorly drained Sun soils. Hollis soils are better drained and shallower to bedrock than Sun soils. Hollis soils are in landscape settings similar to Nassau, Taconic, and Farmington soils. Hollis soils are underlain by granite, schist, or gneiss. Nassau soils are underlain by folded shale. Taconic soils are underlain by phyllite, slate, schist or quartzite bedrock. The mean annual soil temperature is less than 47 degrees Fahrenheit. Farmington soils are underlain by limestone.

Typical pedon of Hollis loam, in an area of Chatfield-Hollis complex, hilly, very rocky, in the town of Dover, about 150 feet west of Duell Road, about .7 miles south of the intersection with State Route 55, in a wooded area:

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; many fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—3 to 10 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; very

friable; common fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw2—10 to 15 inches; olive brown (2.5Y 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent rock fragments; strongly acid; abrupt smooth boundary.

R—15 inches; folded micaceous schist bedrock.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Rock fragments make up 0 to 5 percent of the volume of the A horizon, 5 to 35 percent of the volume of the B and C horizon, if present. Reaction ranges from very strongly acid to moderately acid, unless limed.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. The horizon is massive, or structure is weak granular or subangular blocky structure. Consistence is friable or very friable.

Some pedons have a thin BC or C horizon which is similar to the Bw horizon except that the hue is also allowed to be 5Y.

The bedrock is schist, granite, or gneiss. In places, it is massive, but it dominantly has vertical and horizontal fractures in the upper 12 to 30 inches.

Hoosic Series

The Hoosic series consists of very deep, somewhat excessively drained, rapid to moderately rapid over very rapid permeable soils formed on outwash plains and terraces. These soils formed in glacial outwash. Slopes range from 0 to 45 percent. Slopes from 0 to 35 percent are complex and irregular, and slopes from 35 to 45 percent are simple and smooth.

Hoosic soils are near somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils. Hoosic soils are similar to Knickerbocker soils, well drained Haven soils, and well drained Copake soils. Hoosic soils have a sandier surface than Knickerbocker, Haven, and Copake soils. Copake soils are also formed in glaciofluvial deposits high in limestone fragments.

Typical pedon of Hoosic gravelly loam, nearly level, in the town of Washington, about 500 feet north of Route 44A, about 500 feet east of the intersection with State Route 82:

Ap—0 to 9 inches, dark brown (10YR 3/3) gravelly loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; 20 percent rock fragments; strongly acid; abrupt smooth boundary.

Bwl—9 to 15 inches, yellowish brown (10YR 5/6) gravelly loam; weak fine subangular blocky structure; friable; many fine roots; 30 percent rock fragments; strongly acid; clear wavy boundary.

Bw2—15 to 24 inches, yellowish brown (10YR 5/6) very gravelly sandy loam; weak fine granular structure; very friable; common fine roots; 50 percent rock fragments; strongly acid; clear irregular boundary.

2BC—24 to 31 inches, yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) very gravelly loamy sand; single grain; loose; few fine roots; 50 percent rock fragments; strongly acid; clear irregular boundary.

2C—31 to 70 inches, dark brown (10YR 4/3) extremely gravelly loamy sand; single grain; loose; very few fine roots; 70 percent rock fragments; strongly acid.

The thickness of the solum ranges from 14 to 36 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 15 to 35 percent of the volume of the A horizon, 15 to 50 percent of the volume of the B horizon, and 35 to 70 percent of the volume of the C horizon. Unless limed, reaction is very strongly acid or strongly acid above 30 inches. Reaction ranges from very strongly acid to slightly acid below 30 inches except in some pedons where it increases to mildly alkaline below a depth of 7 feet.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction. Structure is weak or moderate medium or fine granular. Consistence is friable or very friable.

The Bw horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture is sandy loam, fine sandy loam, very fine sandy loam or loam in the fine-earth fraction. Structure is weak or very weak fine or medium granular or subangular blocky. Consistence is friable or very friable.

The BC horizon is similar to the Bw horizon except that texture is loamy fine sand, loamy sand, or sand in the fine-earth fraction. The horizon is also allowed to be single grained and loose.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Texture is loamy sand,

loamy coarse sand, sand, or coarse sand in the fine-earth fraction. The horizon is single grained and loose.

Hudson Series

The Hudson series consists of very deep, moderately well drained, moderately slow permeable or moderately permeable soils over slow permeable or very slow permeable soils on broad glacial lacustrine plains. These soils formed in fine calcareous glaciolacustrine sediments. Slopes are simple and smooth from 3 to 15 percent and complex and irregular from 15 to 45 percent.

Hudson soils are mapped in an undifferentiated group with Vergennes soils. Hudson soils formed in fine glaciolacustrine sediments and Vergennes soils formed in very fine glaciolacustrine sediments. Hudson soils are near somewhat poorly drained Kingsbury and Rhinebeck soils and very poorly drained Livingston soils. In places, Hudson soils are also near Unadilla soils which formed in silty glaciolacustrine sediments.

Typical pedon of Hudson silt loam, in an area of Hudson and Vergennes soils, 3 to 8 percent slopes, in the town of Rhinebeck, about 400 feet north of County Route 85, about .5 miles west of the intersection with Mill Road:

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

E—9 to 12 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

B/E—12 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; coatings on ped faces greater than 1 mm thick are brown (10YR 5/3, very pale brown (10YR 7/3) dry E material; moderate medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

Bt—18 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; common fine faint yellowish brown (10YR 5/6) and few fine distinct light brownish gray (2.5Y 6/2) mottles; moderate coarse subangular blocky structure; firm; few fine roots; thin faint continuous clay films on faces of peds; moderately acid; clear wavy boundary.

BC—25 to 34 inches; olive brown (2.5Y 4/4) varved silt loam and silty clay loam; weak coarse prismatic structure parting to inherited thick platy; firm; continuous clay films; few manganese stains; neutral; clear smooth boundary.

C1—34 to 49 inches; olive brown (2.5Y 4/4) and reddish brown (5YR 5/3) varved silt loam and silty clay loam; inherited weak medium and thick platy structure; firm; slightly sticky, slightly plastic; common manganese stains; neutral; clear smooth boundary.

C2—49 to 72 inches; olive brown (2.5Y 4/3) and brown (5YR 5/3) varved silt loam and silty clay loam; inherited moderate medium and thick platy structure; firm, slightly sticky, slightly plastic; common manganese stains; slightly effervescent; mildly alkaline.

The thickness of the solum ranges from 20 to 60 inches. Depth to carbonates ranges from 20 to 70 inches. Rock fragments make up 0 to 15 percent of the volume of the A and E horizons, and 0 to 10 percent of the volume of the B and C horizons. Reaction ranges from strongly acid to neutral in the Ap, E, and B and E horizons, moderately acid to mildly alkaline in the Bt and BC horizons, and neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 2 or 3. Texture is loam, silt loam, or silty clay loam in the fine-earth fraction. Structure is weak to strong, fine or medium granular or subangular blocky. Consistence is friable or very friable.

The E horizon has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 or 3, and has faint mottles in some pedons. Texture is loam, silt loam, very fine sandy loam, or silty clay loam in the fine-earth fraction. Structure is weak or moderate subangular blocky or platy. Consistence is very friable, friable, or firm.

The B and E horizon has characteristics similar to the Bt and E horizons. In some pedons, there are few to many faint mottles.

The Bt horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4, and there are both low and high chroma mottles. Texture is silty clay loam or silty clay. Structure is moderate or strong, medium or coarse angular or subangular blocky, with or without coarse or very coarse prisms. Consistence is firm or very firm.

Some pedons have a BC horizon that is similar to the Bt horizon but contains free carbonates and has coarse or very coarse prismatic structure.

The C horizon has hue of 5YR to 5Y, value of 3 to 5, and chroma of 1 to 3. Texture is silt loam, silty clay loam, or clay. The horizon is massive, or structure is platy inherited from the varved parent material.

Hydraquents

Hydraquents consist of very deep, very poorly drained soils on tidal marshland along the Hudson

River. These soils formed in alluvium, glacial till, glacial outwash, or glaciolacustrine sediments. Slopes range from 0 to 1 percent.

Hydraquents are mapped in an undifferentiated group with Medisaprists. Hydraquents have organic material less than 16 inches deep, if at all. Medisaprists have organic material 16 inches deep or more.

Hydraquents are in tidal marshes that are ponded with shallow water for much of the year or are subject to daily inundation by tides along the Hudson River. Because of the variability in characteristics, a typical pedon is not provided.

The n value is greater than or equal to 0.7.

The surface layer is neutral or has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 0 to 2. Texture is silt loam, loam, silty clay loam, fine sandy loam, sandy loam, or their mucky analogues in the fine-earth fraction. Rock fragments make up from 0 to 10 percent of the volume.

The substratum is neutral or has hue of 10YR to 5Y, value of 3 to 6, and chroma of 0 to 2. Mottles are present in those pedons with matrix chroma of 2. Texture ranges from silty clay to loamy very fine sand in the fine-earth fraction. Rock fragments make up 0 to 10 percent of the volume. Sulfidic materials are below a depth of 20 inches.

Kingsbury Series

The Kingsbury series consists of very deep, somewhat poorly drained, very slow permeable soils on broad glacial lacustrine plains. These soils formed in calcareous very fine glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Kingsbury soils are mapped in an undifferentiated group with Rhinebeck soils. Kingsbury soils formed in very fine glaciolacustrine sediments and Rhinebeck soils formed in fine glaciolacustrine sediments. Kingsbury soils are near moderately well drained Hudson and Vergennes soils and very poorly drained Livingston soils. In places, Kingsbury soils also are near well drained Unadilla soils, moderately well drained Scio soils, and somewhat poorly drained Raynham soils. Kingsbury soils are not as well drained as Unadilla and Scio soils and better drained than Raynham soils. Kingsbury soils are also clayeyer throughout than Unadilla, Scio, and Raynham soils.

Typical pedon of Kingsbury silty clay loam in an area of Kingsbury and Rhinebeck soils, in the town of Rhinebeck, about .3 miles west of U.S. Route 9, about .5 miles north of the intersection with Fox Hollow Road:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silty clay loam; strong fine and medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

E—9 to 14 inches, light brownish gray (10YR 6/2) silty clay loam; many medium distinct brownish yellow (10YR 5/8) mottles; strong medium and coarse subangular blocky structure; friable; sticky, plastic; few fine roots; neutral; clear smooth boundary.

Bt—14 to 29 inches; olive (5Y 4/3) clay; many fine and medium distinct light olive brown (2.5Y 5/6) mottles; moderate coarse angular blocky structure within plates; firm; very sticky, plastic; few fine roots; thin continuous gray (N 6/) clay films on ped faces and in pores; common medium manganese stains; neutral; clear smooth boundary.

CB—29 to 38 inches; olive (5Y 4/3) clay; moderate thin platy structure; firm; very sticky, very plastic; continuous thin gray (10YR 5/1) clay films on ped faces and in pores; neutral; abrupt wavy boundary.

C—38 to 72 inches; olive (5Y 4/3) silty clay loam with thin varves of silt loam; common fine distinct light olive brown (2.5Y 5/6) mottles; inherited platy structure; firm; very sticky, very plastic; strongly effervescent; moderately alkaline.

The thickness of the solum ranges from 20 to 36 inches. Depth to carbonates ranges from 20 to 60 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 3 percent of the volume. Reaction ranges from strongly acid to mildly alkaline in the solum.

The Ap or A horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 to 3. Texture is very fine sandy loam, silt loam, silty clay loam, or silty clay. Structure is granular or subangular blocky. Consistence is very friable, friable, or firm.

The E horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4, and it is mottled. Texture is very fine sandy loam, silt loam, silty clay loam, or silty clay. Structure is angular or subangular blocky or platy. Consistence is friable or firm.

The Bt horizon has hue of 10YR to 5Y, value of 3 to 5, chroma of 2 to 4, and it is mottled. Texture is clay. Thick subhorizons of silty clay are present in some pedons. Structure is angular or subangular blocky, within coarse or very coarse prisms in some pedons. Consistence is firm or very firm.

The C horizon has color similar to the Bt horizon; however, mottles are commonly of lower contrast. The texture is silty clay loam, silty clay, or clay. The horizon is massive, within varves in many pedons. When disturbed, the material in many pedons parts into aggregates resembling angular blocky structure, but it lacks the coatings of oriented clay found in the Bt horizon.

Knickerbocker Series

The Knickerbocker series consists of very deep, somewhat excessively drained, moderately rapid permeable over rapid permeable to very rapid permeable soils on outwash plains, terraces and deltas. These soils formed in glacial outwash. Slopes are complex and irregular and range from 0 to 30 percent.

Knickerbocker soils are in landscape settings similar to Hoosic and well drained Haven soils. Knickerbocker soils are sandier throughout than loamy Haven soils and gravelly Hoosic soils. In places, Knickerbocker soils are also near Fredon and Halsey soils. Knickerbocker soils are better drained than somewhat poorly drained Fredon soils and poorly drained and very poorly drained Halsey soils.

Typical pedon of Knickerbocker fine sandy loam, undulating, in the town of Hyde Park, about 500 feet east of the Hudson River, about 900 feet northwest of the Mills Mansion:

Ap—0 to 10 inches; dark brown (10YR 3/3) fine sandy loam, light brownish gray (10YR 6/2) dry; very weak coarse subangular blocky structure parting to weak fine granular structure; very friable; common fine and medium roots; very strongly acid; abrupt wavy boundary.

Bw1—10 to 19 inches; yellowish brown (10YR 5/4) sandy loam; few vertical macropores filled with dark brown (10YR 3/3) organic material; weak medium subangular blocky structure; very friable; few fine roots; strongly acid; clear wavy boundary.

Bw2—19 to 30 inches; dark yellowish brown (10YR 4/4) loamy sand; very weak medium and coarse subangular blocky structure; very friable; few fine roots; less than 1 percent rock fragments; moderately acid; gradual wavy boundary.

C1—30 to 40 inches; dark yellowish brown (10YR 4/4) loamy sand; single grain; loose; strongly acid; gradual wavy boundary.

C2—40 to 60 inches; dark yellowish brown (10YR 3/4) loamy sand; single grain; loose; moderately acid; gradual wavy boundary.

C3—60 to 72 inches; dark brown (10YR 3/3) loamy sand; single grain; loose; moderately acid.

The thickness of the solum ranges from 25 to 44 inches. Rock fragments make up from 0 to 15 percent of the volume of the solum and 0 to 30 percent of the volume of the substratum. Rock fragments are dominantly gravel. Unless limed, reaction ranges from very strongly acid to moderately acid.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Unplowed areas have a thin A horizon with value of 2 or 3 and chroma of 1 or 2. Texture is fine sandy loam or sandy loam. Structure is weak or moderate fine or medium granular. Consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6. Texture is fine sandy loam or sandy loam above a depth of 20 inches and loamy fine sand or loamy sand below 20 inches. The dominant sand size is fine. Structure is weak or very weak subangular blocky or granular. Consistence is friable or very friable.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Some pedons have high chroma mottles below 40 inches. Texture is loamy fine sand, loamy sand, fine sand, or sand.

Linlithgo Series

The Linlithgo series consists of very deep, somewhat poorly drained, moderately permeable over moderately rapid permeable to very rapid permeable soils on flood plains. These soils formed in recent alluvium. Slopes range from 0 to 3 percent.

Linlithgo soils are near well drained Wappinger soils, moderately well drained Pawling soils, and poorly drained and very poorly drained Wayland soils. Linlithgo soils are also near Fluvaquents and Udifluvents, which have greatly varying drainage, horizonation, and other characteristics. All of these soils flood.

Typical pedon of Linlithgo silt loam, in the town of Poughkeepsie, about 400 feet north of Peach Road, about 500 feet west of the intersection with Van Wagner Road:

Ap—0 to 9 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw—9 to 14 inches, pale brown (10YR 6/3) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; 3 percent rock fragments; slightly acid; clear smooth boundary.

Bg—14 to 21 inches, light brownish gray (2.5Y 6/2) silt loam; common fine prominent yellowish brown (10YR 5/6) and common fine distance (10YR 5/3) mottles; weak medium subangular blocky structure; friable; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

2Cg—21 to 26 inches, gray (10YR 5/1) loamy sand; single grain; loose; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

3Cg—26 to 72 inches, grayish brown (2.5Y 5/2) gravelly loamy fine sand with thin lenses of silt loam and fine sandy loam; common medium prominent yellowish brown (10YR 5/8) and

common fine faint light olive brown (2.5Y 5/4) mottles; single grain; loose; 30 percent rock fragments; slightly acid.

The thickness of the solum ranges from 16 to 42 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 5 percent of the volume of the A horizon, 0 to 20 percent of the volume of the B horizon, and 10 to 60 percent of the volume of the C horizon. Unless limed, reaction ranges from very strongly acid to slightly acid in the A and B horizons and from moderately acid to neutral in the C horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. Texture is silt loam or loam. Structure is weak or moderate, fine or medium granular or subangular blocky. Consistence is friable or very friable.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3, and it contains mottles. Texture is silt loam or loam in the fine-earth fraction, or fine sandy loam in the lower part of some horizons. Structure is weak, medium or coarse subangular blocky. Consistence is friable or very friable.

The 2C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3, and there are mottles in some pedons. Texture is loamy fine sand, loamy sand, fine sand, sand, or coarse sand in the fine-earth fraction. The horizon is single grain or massive.

Some pedons have a 3C horizon with characteristics similar to the 2C horizon.

Livingston Series

The Livingston series consists of very deep, very poorly drained, moderately slow permeable over slow permeable or very slow permeable soils on broad glacial lacustrine plains. These soils formed in calcareous very fine glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Livingston soils are near moderately well drained Vergennes soils and somewhat poorly drained Kingsbury soils. In places, Livingston soils are also near Canandaigua soils and somewhat poorly drained Raynham soils. Livingston soils are clayeyer than the Canandaigua soils. Livingston soils are also clayeyer throughout and not as well drained as Raynham soils.

Typical pedon of Livingston silty clay loam, in the town of Red Hook, about 500 feet north of County Route 78, about 575 feet east of the intersection with Wood Road:

A—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; strong fine granular structure; friable; sticky, plastic; many fine roots; moderately acid; abrupt smooth boundary.

Bg1—8 to 19 inches; gray (5Y 5/1) clay; many fine and medium prominent yellowish brown (10YR 5/4) mottles; moderate coarse prismatic structure; very firm; plastic, sticky; few fine roots; slightly acid; clear wavy boundary.

Bg2—19 to 30 inches; gray (5Y 5/1) clay; many fine and medium distinct olive brown (2.5Y 4/4) mottles; moderate coarse prismatic structure; very firm; plastic, sticky; few fine roots; gray (N 5/) ped faces; neutral; clear smooth boundary.

BCg—30 to 38 inches; gray (5Y 5/1) clay; common fine prominent strong brown (7.5YR 5/8) mottles; weak coarse platy structure; very firm; very sticky, plastic; gray (5Y 5/1) ped faces; neutral; clear smooth boundary.

Cg—38 to 72 inches; olive gray (5Y 5/2) clay, with thin strata of dark brown (10YR4/4) silt; common fine distinct light olive brown (2.5Y 5/6) and common fine prominent strong brown (7.5YR 5/8) mottles; weak medium platy structure inherited from varves; very firm; very sticky, very plastic; mildly alkaline, weakly effervescent.

The thickness of the solum ranges from 30 to 48 inches. Depth to bedrock is greater than 60 inches. Reaction ranges from strongly acid to neutral in the A and Bg horizons, neutral or mildly alkaline in the BC horizon, and mildly alkaline or moderately alkaline in the C horizon.

The A horizon is neutral or has hue of 5YR to 5Y, value of 2 or 3, and chroma of 1. Texture is clay, silty clay, silty clay loam, or their mucky analogues.

The Bg and BC horizons are neutral or have hue of 10YR to 5Y, value of 4 or 5, and chroma of 1 or 2. Texture is clay.

The C horizon is neutral or has hue of 10YR to 5Y, value of 4 or 5, and chroma of 1 or 2. Texture is clay.

Macomber Series

The Macomber series consists of moderately deep, well drained, moderately permeable soils on bedrock controlled glaciated uplands. These soils formed in loamy glacial till over fractured and folded phyllite, schist, slate, or quartzite bedrock. The mean annual soil temperature is less than 47 degrees Fahrenheit. Slopes are complex and irregular and range from 5 to 25 percent.

Macomber soils are mapped in complex with Taconic soils, and are near Stockbridge soils. Macomber soils are moderately deep with bedrock at 20 to 40 inches. Taconic soils are shallow with bedrock at 10 to 20 inches. Stockbridge soils are very deep. Macomber soils are in landscape settings similar to Cardigan soils, but Cardigan soils have fewer rock

fragments, are over shale bedrock, and formed where the mean annual soil temperature is more than 47 degrees Fahrenheit.

Typical pedon of Macomber channery silt loam, in an area of Macomber-Taconic complex, rolling, very rocky, in the town of Northeast, about 20 feet east of the Brace Mountain Trail, about .8 miles north east along the trail from the trail head at Quarry Drive:

A—0 to 4 inches; black (10YR 2/1) channery silt loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; 15 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—4 to 11 inches; dark yellowish brown (10YR 4/6) very channery loam; weak fine subangular blocky structure; friable; many fine and medium and few coarse roots; 45 percent rock fragments; strongly acid; clear smooth boundary.

Bw2—11 to 24 inches; dark yellowish brown (10YR 4/4) extremely channery loam; weak fine subangular blocky structure; friable; 60 percent rock fragments; strongly acid; abrupt wavy boundary.

R—24 inches; fractured and folded hard schist and phyllite bedrock.

The thickness of the solum ranges from 15 to 30 inches. Depth to bedrock ranges from 20 to 40 inches. Rock fragments make up from 15 to 35 percent of the volume of the A horizon, 30 to 60 percent of the volume of the B horizon, and from 40 to 65 percent of the volume of the C horizon. Unless limed, the reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. Texture is silt loam or loam in the fine-earth fraction. Structure is weak or moderate, very fine, fine, or medium granular. Consistence is very friable or friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6, with hue of 7.5YR occurring only in the upper part. Texture is silt loam or loam in the fine-earth fraction. Structure is weak or moderate, fine or medium subangular blocky.

The C horizon, where present, has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 6. Texture is silt loam or loam in the fine-earth fraction. Structure is platy or angular blocky, or the horizon is massive. Consistence is friable or firm.

The bedrock is folded and fractured phyllite, schist, slate, or quartzite.

Massena Series

The Massena series consists of very deep, somewhat poorly drained, moderately permeable over moderately slow permeable to slow permeable soils on glaciated uplands. These soils formed in loamy glacial till. Slopes range from 0 to 8 percent.

Massena soils are mapped near well drained Stockbridge soils, moderately well drained Georgia soils, and poorly drained and very poorly drained Sun soils. In places, Massena soils are also near well drained Dutchess, Charlton, Chatfield, and Galway soils. Massena soils are not as well drained as Dutchess, Charlton, Chatfield, and Galway soils. Massena soils are also deeper to bedrock than Chatfield and Galway soils.

Typical pedon of Massena silt loam, 0 to 3 percent slopes, in the town of Pawling, about 65 feet south of County Route 68, about .5 miles east of the intersection with Tracy Road:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and few medium roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

Bw—7 to 14 inches; yellowish brown (10YR 5/4) loam; common fine and medium faint yellowish brown (10YR 5/6 and 10YR 5/8) and few fine faint light brownish gray (10YR 6/2) mottles; moderate medium and coarse subangular blocky structure; friable; few fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

Bg1—14 to 19 inches; grayish brown (2.5Y 5/2) fine sandy loam; many (30 percent) fine and medium distinct yellowish brown (10YR 5/4 and 10YR 5/6) mottles; moderate medium and coarse subangular blocky structure; friable; few fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

Bg2—19 to 33 inches; grayish brown (2.5Y 5/2) loam; common medium prominent strong brown (7.5YR 5/6) and common fine faint light olive brown (2.5Y 5/4) mottles; weak medium and coarse subangular blocky structure; friable; 10 percent rock fragments; neutral; gradual wavy boundary.

Cg1—33 to 47 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak thin and medium platy structure; friable; 10 percent rock fragments; mildly alkaline; gradual wavy boundary.

Cg2—47 to 72 inches; grayish brown (2.5Y 5/2) fine sandy loam; common medium prominent yellowish brown (10YR 5/8) mottles; weak thin and medium platy structure; firm; 10 percent rock fragments; moderately alkaline; slightly effervescent.

The thickness of the solum ranges from 18 to 36 inches. Depth to carbonates ranges from 20 to 50 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 15 percent of the volume

of the A horizon, 5 to 30 percent of the volume of the B horizon, and 5 percent to 50 percent of the volume of the C horizon. Reaction ranges from moderately acid to neutral in the solum and from neutral to moderately alkaline in the substratum.

The A horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 or 4, and chroma of 1 or 2. Texture is sandy loam, fine sandy loam, loam, or silt loam in the fine-earth fraction. Structure is very weak to moderate fine or very fine granular. Consistence is friable or very friable.

The B horizon has hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4, 5, or 6, and chroma of 2, 3, or 4 and is mottled. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. It is massive, or structure is weak medium or fine subangular blocky. Consistence is friable or very friable.

The C horizon is similar to the B horizon in color and texture of the fine-earth fraction. It is massive or structure is platy. Consistence is very firm, firm, or friable.

Medisaprists

The Medisaprists series consists of very deep, very poorly drained soils on tidal marsh land along the Hudson River. These soils formed in highly decomposed organic material. Slopes are from 0 to 1 percent.

Medisaprists are mapped in an undifferentiated group with Hydraquents. Medisaprists have organic material at least 16 inches deep. Hydraquents have organic material less than 16 inches deep, if at all.

Medisaprists are in tidal marshes that are ponded with shallow water throughout much of the year or are subject to daily inundation by tides along the Hudson River. Because of the variability in characteristics a typical pedon is not provided.

Medisaprists have dominantly highly decomposed organic soil material 16 inches or more thick. Texture of the underlying mineral soil material ranges from silty clay to gravelly loamy sand. In places, bedrock underlies the organic deposits. They are ponded with water for 6 months or more of the year or have a daily fluctuating water table.

The organic material is neutral or has hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2. It consists of well decomposed woody or herbaceous plant remnants with less than 15 percent fibers after rubbing sapric material. Reaction ranges from moderately acid to neutral. Sulfuric horizons are below a depth of 20 inches and sulfidic materials are deeper than 40 inches in some pedons.

Nassau Series

The Nassau series consists of shallow, somewhat excessively drained, moderately permeable soils on bedrock controlled glaciated uplands. These soils formed in loamy glacial till over folded, acid shale bedrock. Slopes are complex and irregular and range from 1 to 70 percent.

Nassau soils are mapped with or near rock outcrop and Cardigan and Dutchess soils. Nassau soils are shallow and have bedrock at 10 to 20 inches. Cardigan soils are moderately deep and have bedrock at 20 to 40 inches. Dutchess soils are very deep. Nassau soils are in landscape settings similar to Hollis, Farmington, and Taconic soils. Nassau soils are underlain by folded shale. Hollis soils are underlain by granite, schist, or gneiss. Farmington soils are underlain by limestone. Taconic soils are over phyllite, schist, and slate of quartzite bedrock where the mean annual soil temperature is less than 47 degrees Fahrenheit.

The typical pedon of Nassau channery silt loam, in an area of Nassau-Cardigan complex, hilly, very rocky, in the town of Stanford, about 300 feet east of Willowbrook Road, about .7 miles south of the intersection with Bulls Head Road:

Oe—1 to 0 inches, black (10YR 2/1) partially decomposed needles and leaf litter.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) channery silt loam; moderate fine granular structure; very friable; many fine and few medium roots; 30 percent rock fragments; very strongly acid; abrupt wavy boundary.

Bw—5 to 16 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; very friable; many fine roots; 55 percent rock fragments; very strongly acid; abrupt smooth boundary.

R—16 inches; dark gray (10YR 4/1) folded, rippable shale bedrock in upper part, hard below, nearly vertical.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Rock fragments make up 15 to 35 percent of the volume of the Ap horizon and 35 to 70 percent of the volume of the B horizon. Rock fragments consist mainly of slate and shale. Reaction is very strongly acid or strongly acid, unless limed.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. Texture is loam or silt loam in the fine-earth fraction. Structure is weak or moderate medium or fine granular. Consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 8. Texture is loam or silt loam in the fine-earth fraction. Structure is weak or moderate medium or fine subangular blocky. Consistence is friable or very friable.

Some thicker pedons have a thin C horizon immediately above the bedrock.

The bedrock is hard folded shale.

Palms Series

The Palms series consists of very deep, very poorly drained, moderately slow permeable to moderately rapid permeable over moderate to moderately slow permeable soils. These soils occur in swampy areas in troughs in folded bedrock and in impounded areas on glaciated uplands and outwash plains. They formed in highly decomposed organic material. Slopes range from 0 to 2 percent.

Palms soils are similar to Carlisle soils. The organic layers in Palms soils have a total thickness of 16 to 51 inches. The organic layers in Carlisle soils are greater than 51 inches thick. Palms soils are often mapped near Sun soils. Sun soils are mineral and are poorly drained and very poorly drained.

Typical pedon of Palms muck, in the town of Clinton, about .4 miles east of Mountain View Road, about 1 mile north of the intersection with Schultz Hill Road, in Davis Swamp:

0a1—0 to 12 inches; black (10YR 2/1) muck; 5 percent fibers, 1 percent rubbed; weak fine granular structure; very friable; slightly sticky; many fine roots; moderately acid; diffuse gradual boundary.

0a2—12 to 20 inches; black (10YR 2/1) muck; 15 percent fibers, 2 percent rubbed; massive; friable; slightly sticky; few fine roots; moderately acid; diffuse gradual boundary.

0a3—20 to 30 inches; dark gray (10YR 4/1) muck; 5 percent fibers, 0 percent rubbed; massive; friable; slightly sticky; 5 percent mineral material with 1 percent rock fragments; slightly acid; abrupt smooth boundary.

2Cg—30 to 80 inches; gray (2.5Y 4/1) gravelly fine sandy loam; massive; friable; 20 percent rock fragments; neutral; slightly effervescent below 50 inches.

The thickness of the organic deposit ranges from 16 to 50 inches. The organic material is derived primarily from herbaceous plants, but some tiers contain as much as 15 percent woody material. The reaction of the Oa horizon ranges from strongly acid to mildly alkaline. Some organic tiers contain free carbonates.

The surface tier is neutral or has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 2. It is dominantly sapric material; however, some pedons have hemic material.

The subsurface and bottom tiers are neutral or have hue of 5YR to 10YR, value of 2 to 4, and chroma of 0 to 3. Thin layers, less than 10 inches thick, of hemic material are in some pedons. Thin layers, less than 5 inches thick, of fibric material are in some pedons. Some pedons have a thin layer of sedimentary peat above the C horizon. Some pedons have a thin A horizon above the C horizon.

The C horizon is neutral or has hue of 10YR to 5GY, value of 3 to 7, and chroma of 0 to 4. Texture is loamy very fine sand, sandy loam, fine sandy loam, loam, silt loam, silty clay loam, clay loam, or sandy clay loam in the fine-earth fraction. The upper 12 inches of this horizon averages less than 35 percent clay. Some pedons contain thin strata of fine sand, loamy sand, or silt. Reaction ranges from slightly acid to moderately alkaline. Rock fragments make up from 0 to 25 percent of the volume. Some pedons contain free carbonates.

Pawling Series

The Pawling series consists of very deep, moderately well drained, moderately permeable over moderately rapid or rapid permeable soils on flood plains. These soils formed in recent alluvium. Slopes range from 0 to 3 percent.

Pawling soils are mapped near well drained Wappinger soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Pawling soils are also near Fluvaquents and Udifluvents, which have greatly varying drainage, horizonation, and other characteristics. All of these soils are on flood plains.

Typical pedon of Pawling silt loam, in the town of LaGrange, about .4 miles west of County Route 33, about 400 feet north of the intersection with County Route 42, in a cropland field:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

Bw1—8 to 14 inches; dark brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; moderately acid; clear wavy boundary.

Bw2—14 to 21 inches; dark brown (10YR 4/3) silt loam; many fine distinct grayish brown (2.5Y 5/2) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; moderately acid; clear smooth boundary.

Bw3—21 to 25 inches; dark brown (10YR 4/3) silt loam;

many fine and medium distinct grayish brown (2.5Y 5/2) mottles; weak medium subangular blocky structure; friable; few fine roots; moderately acid; clear smooth boundary.

Bw4—25 to 33 inches; dark brown (10YR 4/3) loam; many fine and medium distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; moderately acid; abrupt wavy boundary.

2C1—33 to 37 inches; grayish brown (10YR 5/2) gravelly loamy sand; massive; very friable; 25 percent rock fragments; slightly acid; abrupt wavy boundary.

2C2—37 to 72 inches; brown (10YR 4/3) very gravelly sand; single grain; loose; 55 percent rock fragments; slightly acid.

The thickness of the solum ranges from 25 to 45 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 10 percent of the volume of the solum and 15 to 70 percent of the volume of the substratum. Unless limed, reaction ranges from strongly acid to moderately acid above 20 inches and moderately acid to neutral below 20 inches.

The A horizon has hue of 10YR or 2.5Y, value 3 or 4 and chroma of 2 or 3. Texture is silt loam or loam. Structure is weak or moderate medium or fine granular. Consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. Mottles are present and have hues of 10YR to 5Y, values of 4 to 7, and chroma of 1 to 3. Texture is silt loam, loam, or fine sandy loam. Structure is weak or moderate, fine to coarse subangular blocky or granular. Consistence is friable or very friable.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 3. Mottles with colors like the B horizon are in some pedons. Texture is sand or loamy sand in the fine-earth fraction. It is massive or single grain. Consistence is very friable or loose.

Pittstown Series

The Pittstown series consists of very deep, moderately well drained, moderately permeable over slow or moderately slow permeable soils on glaciated uplands. These soils formed in compact glacial till derived mainly from slate, phyllite, shale, or schist. Slopes range from 3 to 25 percent.

Pittstown soils are mapped near well drained Bernardston soils, somewhat poorly drained Punsit soils, and poorly drained and very poorly drained Sun soils. Pittstown soils are in landscape settings similar to Georgia soils. Pittstown soils have a firmer substratum than Georgia soils.

Typical pedon of Pittstown silt loam, 3 to 8 percent slopes, in the town of Wappinger, about 500 feet east of DeGarmo Hill Road, about .5 miles north of the intersection with County Route 93:

Ap—0 to 8 inches; dark brown (l0YR 4/3) silt loam; moderate fine granular structure; friable; many fine and medium roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

E—8 to l0 inches; pale brown (10YR 6/3) silt loam; weak thin platy structure parting to weak fine granular structure; friable; common fine roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bw—10 to 22 inches; light olive brown (2.5Y 5/4) silt loam; common medium prominent dark brown (10YR 3/3), common fine distinct yellowish brown (10YR 5/8), and common medium distinct light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots along ped faces; l0 percent rock fragments; strongly acid; clear wavy boundary.

Cd1—22 to 35 inches; dark yellowish brown (10YR 4/3) channery silt loam; very weak coarse prismatic structure; prism faces greater than 2 feet apart; massive within prisms; firm; few roots along prism faces; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Cd2—35 to 80 inches; light olive brown (2.5Y 5/4) channery silt loam; common medium faint olive brown (2.5Y 5/6) and few fine distinct light brownish gray (2.5Y 6/2) mottles; massive; very firm; 15 percent rock fragments; few vertical streaks greater than 2 feet apart; moderately acid grading to slightly acid in the lower part.

The thickness of the solum ranges from l5 to 30 inches and generally is the same as the depth to the dense substratum. Depth to mottling ranges from l5 to 24 inches. Rock fragments make up from 5 to 15 percent of the volume of the surface, 5 to 40 percent of the volume of the subsoil, and from 5 to 50 percent of the volume of the dense substratum. Unless limed, reaction ranges from very strongly acid to moderately acid above a depth of 30 inches and from very strongly acid to slightly acid below 30 inches.

The Ap or A horizon has hue of l0YR, value of 2 to 4, and chroma of 2 or 3. Texture is silt loam, loam, or very fine sandy loam in the fine-earth fraction. Structure is weak or moderate fine or medium granular. Consistence is very friable or friable.

Some pedons have a thin E horizon.

The B horizon has hue of 7.5YR to 2.5Y in the upper part and 2.5Y or 5Y in the lower part. Value is 4 or 5, and chroma is 3 to 6. There are distinct or prominent mottles in the lower part. Texture is silt loam, loam, or very fine sandy loam in the fine-earth fraction. Consistence is friable or very friable.

Some pedons have a friable C horizon above the Cd horizon which has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 or 3. Texture is similar to the Cd horizon.

The Cd horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam, loam, or very fine sandy loam in the fine-earth fraction. Consistence is firm or very firm.

Punsit Series

The Punsit series consists of very deep, somewhat poorly drained, moderately permeable over slow permeable soils on glaciated uplands. These soils formed in compact glacial till derived mainly from slate, phyllite, shale or schist. Slopes range from 0 to 8 percent.

Punsit soils are mapped near well drained Bernardston soils, moderately well drained Pittstown soils, and poorly drained and very poorly drained Sun soils. Punsit soils are in landscape settings similar to Massena soils. Punsit soils have a firmer substratum than Massena soils.

Typical pedon of Punsit silt loam, 3 to 8 percent slopes, in the town of Union Vale, about .4 miles south of Waterbury Hill Road, about .7 miles east of the intersection with Oswego Road:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; 5 percent rock fragments; moderately acid; abrupt smooth boundary.

Bg1—6 to 11 inches; light brownish gray (2.5Y 6/2) silt loam; many (more than 40 percent) medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine roots; 5 percent rock fragments; moderately acid; clear, smooth boundary.

Bg2—11 to 17 inches; grayish brown (2.5Y 5/2) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium platy parting to moderate fine subangular blocky structure; friable; 5 percent rock fragments; moderately acid; clear smooth boundary.

Cd1—17 to 25 inches; olive (5Y 5/3) silt loam; common medium faint yellowish brown (10YR 5/8) mottles; weak thick platy structure; firm; 10 percent rock fragments; moderately acid; gradual wavy boundary.

Cd2—25 to 80 inches; olive (5Y 5/3) silt loam; common medium prominent dark yellowish brown (10YR 4/4) mottles; massive; firm; 10 percent rock fragments; slightly acid.

The thickness of the solum ranges from 15 to 30 inches and generally corresponds to the depth to the dense substratum. Depth to mottling ranges from 6 to 14 inches. The texture throughout is loam or silt loam in the fine-earth fraction. Rock fragments make up 0 to 15 percent of the volume of the A horizon, from 5 to 25 percent of the volume of the B horizon, and 10 to 35 percent of the volume of the substratum. Reaction is slightly acid or moderately acid.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Structure is weak or moderate fine or medium granular. Consistence is very friable or friable.

The B horizon has hue of 10YR or 2.5Y in the upper part and hue of 2.5Y or 5Y in the lower part. Value is 5 or 6 and chroma is 1 or 2. There are distinct or prominent mottles. Structure is weak or moderate fine or medium subangular blocky. Consistence is friable or firm.

The Cd horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 or 3. The horizon is massive or the structure is platy. Consistence is firm or very firm.

Raynham Series

The Raynham series consists of very deep, somewhat poorly drained, moderately permeable to moderately slow permeable over slow permeable soils on glacial lacustrine plains. These soils formed in silty glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Raynham soils are mapped near well drained Unadilla soils and moderately well drained Scio soils. Unadilla and Scio soils formed in silty glaciolacustrine sediments.

Typical pedon of Raynham silt loam, in the town of Rhinebeck, about 200 feet south of Route 9G, about 500 feet south of the intersection with U.S. Route 9:

A—0 to 2 inches; very dark brown (10YR 2/2) silt loam; weak fine granular structure; very friable; many fine and very fine roots; neutral; abrupt smooth boundary.

AB—2 to 8 inches; dark grayish brown (10YR 4/2) silt loam; moderate coarse subangular blocky structure; friable; few fine and coarse roots; neutral; clear smooth boundary.

Bg—8 to 26 inches; olive gray (5Y 4/2) silt loam; many

(greater than 40 percent) fine and medium prominent strong brown (7.5YR 5/6 and 4/6) mottles; weak medium subangular blocky structure; friable; neutral; clear smooth boundary.

BCg—26 to 30 inches; grayish brown (2.5Y 5/2) silt loam; common fine distinct yellowish brown (10YR 5/8) mottles; weak medium angular blocky structure inherent from varves; friable; neutral; abrupt smooth boundary.

Cg—30 to 80 inches; gray (5Y 5/1) very fine sandy loam; common fine prominent yellowish brown (10YR 5/4) mottles; massive; friable; neutral.

Thickness of the solum ranges from 16 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 2 percent of the volume. Reaction ranges from strongly acid to neutral in the solum and from moderately acid to mildly alkaline in the substratum.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. Texture is silt loam, silt, very fine sandy loam, or loam.

The B horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. At least one subhorizon within 20 inches of the surface has a dominant chroma of 2. Texture may be silt loam, silt, very fine sandy loam, or loamy very fine sand. Thin layers, 1 to 3 inches thick, of sand or gravelly sand, and silty clay loam are in some pedons.

The C horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. Texture is silt loam, silt, or very fine sandy loam, and is commonly stratified or varved. Thin layers of fine sand, sand, gravelly sand, or silty clay loam are in some pedons.

Rhinebeck Series

The Rhinebeck series consists of deep, somewhat poorly drained, slow permeable soils on broad glacial lake plains. These soils formed in calcareous fine glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Rhinebeck soils are mapped in an undifferentiated group with Kingsbury soils. Rhinebeck soils formed in fine glaciolacustrine sediments, and Kingsbury soils formed in very fine glaciolacustrine sediments. Rhinebeck soils are mapped near moderately well drained Hudson and Vergennes soils and poorly drained Livingston soils. In places, Rhinebeck soils are also near well drained Unadilla soils, moderately well drained Scio soils, and somewhat poorly drained Raynham soils. Rhinebeck soils are not as well drained as Unadilla and Scio soils and are better drained than Raynham soils. Rhinebeck soils are also clayeyer throughout than Unadilla, Scio, and Raynham soils.

Typical pedon of Rhinebeck silt loam, in an area of Kingsbury and Rhinebeck soils, in the town of Red Hook, about 110 feet south of N.Y. State Route 9G, about 1.3 miles east of the intersection with County Route 80:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

E—9 to 15 inches; gray (5Y 6/1) silty clay loam; many fine prominent yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm; common fine roots; neutral; clear smooth boundary.

Bt—15 to 21 inches; light olive brown (2.5Y 5/4) silty clay loam; many fine prominent gray (5Y 6/1) mottles; moderate coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine roots; many distinct silt coatings and clay films on faces of peds; neutral, clear smooth boundary.

BCg—21 to 31 inches; light olive brown (2.5Y 4/2) silty clay loam; many fine and medium prominent gray (5Y 6/1) mottles; weak coarse prismatic structure parting to inherited thin weak platy; firm; common distinct silt coatings and clay films on ped faces; common manganese stains; neutral; abrupt smooth boundary.

C—31 to 72 inches; brown (10YR 5/3) silt loam; many gray (5Y 6/1) streaks; inherited thin platy structure; firm; many manganese stains; slightly effervescent; moderately alkaline.

The thickness of the solum ranges from 20 to 48 inches. Depth to carbonates ranges from 20 to 60 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 10 percent of the volume of the Ap horizon, and 0 to 10 percent of the volume of the B and C horizons. Reaction ranges from strongly acid to neutral in the Ap horizon, strongly acid to mildly alkaline in the B horizon, and slightly acid to moderately alkaline in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 3. Texture is silt loam or silty clay loam in the fine-earth fraction. Structure is granular or subangular blocky. Consistence is very friable or friable.

The E horizon has hue of 7.5YR to 5Y, value of 4 to 6, chroma of 1 to 3, and it is mottled. Texture is silt loam, very fine sandy loam, or silty clay loam. Structure is weak or moderate subangular blocky or platy. Consistence is very friable to firm.

A BE horizon replaces or underlies the E horizon in some pedons. Colors are similar to the E horizon in hue and value, but chroma ranges from 3 to 6. Texture

is silt loam, silty clay loam, or silty clay. Consistence is friable or firm.

The Bt horizon has hue of 7.5YR to 5Y, value of 3 to 5, chroma of 2 to 4, and it is mottled. Texture is silty clay loam or silty clay with subhorizons of silt loam or clay in some pedons. Structure is weak to strong, prismatic or subangular or angular blocky either single or compound. Consistence is firm or very firm.

Some pedons have a BC horizon with similar colors and texture. Structure may also be platy inherited from rock structure. They are calcareous or noncalcareous. Consistence is firm or very firm.

The C horizon has hue of 5Y to 5Y, value of 3 to 5, and chroma of 1 to 4. Texture is mainly silt loam to clay with subhorizons ranging to fine sand. The horizon is massive, with or without varving.

Scio Series

The Scio series consists of very deep, moderately well drained, moderately permeable over moderately rapid to rapid permeable soils on glacial lacustrine plains. These soils formed in silty glaciolacustrine sediments. Slopes range from 0 to 3 percent.

Scio soils are mapped near well drained Unadilla soils and poorly drained and somewhat poorly drained Raynham soils. Unadilla and Scio soils formed in silty glaciolacustrine sediments.

Typical pedon of Scio silt loam, in the town of Red Hook, about 0.5 miles west-southwest along Pitcher Road from the intersection with U.S. Route 9 and 3050 feet north:

Ap—0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable; many fine roots; slightly acid (limed); abrupt smooth boundary.

Bw1—8 to 12 inches, yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Bw2—12 to 23 inches, brown (10YR 5/3) very fine sandy loam; common fine faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; abrupt smooth boundary.

Bw3—23 to 29 inches; yellowish brown (10YR 5/4) very fine sandy loam; many fine and medium distinct light olive brown (2.5Y 5/6) and light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; friable; few fine roots; strongly acid; abrupt smooth boundary.

Bw4—29 to 34 inches; olive gray (5Y 5/2) silt loam; many fine prominent yellowish brown (10YR 5/4) and common fine distinct yellowish brown (10YR 5/6) mottles; platy structure within weak very coarse prisms; friable; discontinuous vertical brown (10YR 5/3) silt coats on ped surfaces and in pores; strongly acid; abrupt smooth boundary.

C—34 to 72 inches; brown (10YR 5/3) silt loam and very fine sandy loam; common fine distinct olive gray (5Y 5/2) and yellowish brown (10YR 5/4) mottles; weak medium and thick platy structure; very friable; moderately acid to neutral.

The thickness of the solum ranges from 20 to 48 inches. Depth to material contrasting with solum texture is greater than 40 inches. Depth to bedrock is greater than 60 inches. Depth to free carbonates is greater than 80 inches. Rock fragments make up from 0 to 5 percent of the volume above 40 inches and 0 to 60 percent below.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Uncultivated pedons have an A horizon that has a value as low as 2. Texture is silt loam or very fine sandy loam. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable. Reaction ranges from extremely acid to strongly acid, unless limed.

The B horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 3 to 6. There are both high and low chroma mottles within a depth of 24 inches. Texture is silt loam or very fine sandy loam. Structure is weak or moderate, thin to thick, or fine to coarse, platy, prismatic or subangular blocky. Consistence is friable or very friable. Reaction ranges from extremely acid to strongly acid within a depth of 30 inches and very strongly acid to moderately acid below 30 inches.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Texture is silt loam through stratified gravel and sand. It is massive or single grain, or has platy structure. Consistence is loose, very friable, friable or firm. Reaction ranges from strongly acid to mildly alkaline.

Stockbridge Series

The Stockbridge series consists of very deep, well drained, moderately permeable over moderately slow to slow permeable soils on glaciated uplands. These soils formed in loamy calcareous glacial till. Slopes range from 2 to 45 percent.

Stockbridge soils are mapped near moderately well drained Georgia soils, somewhat poorly drained Massena soils, and poorly drained and very poorly drained Sun soils. Stockbridge soils are often mapped with or near Galway and Farmington soils. Stockbridge soils are very deep to bedrock. Galway soils are

moderately deep and have limestone bedrock at 20 to 40 inches. Farmington soils are shallow and have limestone bedrock at 10 to 20 inches.

Typical pedon of Stockbridge silt loam, 8 to 15 percent slopes, in the town of LaGrange, about 800 feet southeast of Hillside Lake Road, about .4 miles south of the intersection with Arthursburg Road:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many fine and very fine roots; 5 percent rock fragments; neutral; clear smooth boundary.

Bw1—6 to 11 inches; dark brown (10YR 4/3) silt loam; moderate medium subangular blocky structure; friable; many fine and very fine roots; 5 percent rock fragments; neutral; clear smooth boundary.

Bw2—11 to 23 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; common fine and very fine roots; few fine tubular pores; 5 percent rock fragments; neutral; gradual wavy boundary.

C—23 to 80 inches; brown (10YR 5/3) silt loam; massive; firm; 5 percent rock fragments; neutral; very slightly effervescent below 42 inches.

The thickness of the solum ranges from 20 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 5 to 15 percent of the volume of the A horizon, 5 to 35 percent of the volume of the subsoil and substratum to a depth of 40 inches and 5 to 50 percent of the volume below 40 inches. Reaction ranges from strongly acid to neutral in the surface layer, from moderately acid to neutral to a depth of 40 inches, and from moderately acid to moderately alkaline below 40 inches. Depth to carbonates is greater than 40 inches.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. Texture is loam, silt loam, or very fine sandy loam in the fine-earth fraction. Structure is weak or moderate granular. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 2.5Y in the upper part and hue of 10YR to 5Y in the lower part. Value is 4 to 6 and chroma is 3 to 6. Texture is loam or silt loam in the fine-earth fraction. The horizon is massive, or structure is weak or moderate subangular blocky. Consistence is friable or firm.

The C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4. Some pedons have faint mottles below a depth of 30 inches. Texture is dominantly loam or silt loam in the fine-earth fraction, but it ranges to fine sandy loam below a depth of 40 inches. The horizon is massive, or structure is platy. Consistence is firm or very firm.

Sun Series

The Sun series consists of very deep, poorly drained and very poorly drained, moderately permeable over slowly permeable to very slowly permeable soils on glacial till plains, drainageways, and impounded areas. These soils formed in glacial till of mixed mineralogy. Slopes range from 0 to 3 percent.

Sun soils are mapped near Palms soils. Sun soils have less than 16 inches of organic material on the surface and can be poorly drained or very poorly drained. Palms soils have 16 to 51 inches of organic material on the surface and are very poorly drained. Sun soils are also mapped near all of the glacial till soils in this survey.

Typical pedon of Sun silt loam, in the town of Washington, about 200 feet west of Stanford Road, about 350 feet south of the intersection with Woodstock Road:

Oi—1 to 0 inches; black (10YR 2/1) relatively undecomposed leaf litter; friable; very strongly acid; abrupt smooth boundary.

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and very fine roots; moderately acid; abrupt wavy boundary.

Bg1—4 to 9 inches; light brownish gray (2.5Y 6/2) silt loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; many fine and very fine roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bg2—9 to 16 inches; grayish brown (2.5Y 5/2) loam; many (greater than 40 percent) medium prominent yellowish brown (10YR 5/8) mottles and few fine distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; common fine roots; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

BCg—16 to 22 inches; olive gray (5Y 5/2) gravelly loam; few medium prominent yellowish brown (10YR 5/8) mottles; weak coarse subangular structure; friable; few coarse and common fine roots; 15 percent rock fragments; slightly acid; abrupt smooth boundary.

Cg—22 to 80 inches; olive gray (5Y 5/2) gravelly loam; common coarse prominent yellowish brown (10YR 5/8) mottles; massive; friable; few fine roots; 25 percent rock fragments; neutral.

The thickness of the solum ranges from 20 to 40 inches. Depth to carbonates ranges from 20 to 70 inches; however, some pedons do not have carbonates

in the soil. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 15 percent of the volume of the A horizon, 0 to 35 percent of the volume of the B horizon, and 20 to 50 percent of the volume of the C horizon.

The A horizon has hue of 2.5Y or 10YR, value of 2 to 4, and chroma of 1 or 2. Texture is silt loam, loam, fine sandy loam, or sandy loam in the fine-earth fraction. Structure is weak or moderate granular. Consistence is friable or very friable. In uncultivated areas, the soil has an O horizon 1 to 4 inches thick. Reaction ranges from strongly acid to slightly acid, unless limed.

The Bg horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 2. Mottles are common or many. Texture is silt loam, loam, fine sandy loam, or sandy loam in the fine-earth fraction. Structure is weak or moderate angular or subangular blocky or the horizon is massive. Reaction ranges from moderately acid to neutral.

The Bw horizon, where present, has hue of 5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. There are both low and high chroma mottles. Texture is sandy loam, fine sandy loam, or loam in the fine-earth fraction. Structure is weak or moderate angular or subangular blocky or the horizon is massive. Reaction ranges from moderately acid to neutral.

The C horizon has hue of 5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. Texture is loam, fine sandy loam, or sandy loam in the fine-earth fraction. Structure is weak platy or the material is massive. Reaction ranges from neutral to moderately alkaline.

Taconic Series

The Taconic series consists of shallow, somewhat excessively drained, moderately permeable to moderately rapid permeable on bedrock controlled glaciated uplands. These soils formed in loamy glacial till over fractured and folded phyllite, schist, slate, or quartzite bedrock. The mean annual soil temperature is less than 47 degrees Fahrenheit. Slopes are complex and irregular and range from 5 to 80 percent.

Taconic soils are mapped in complex with Macomber soils and rock outcrop and are near Stockbridge soils. Taconic soils are shallow with bedrock and 10 to 20 inches. Macomber soils are moderately deep with bedrock at 20 to 40 inches. Stockbridge soils are very deep. Taconic soils are in landscape settings similar to Nassau soils, but Nassau soils are over shale bedrock where the mean annual soil temperature is more than 47 degrees Fahrenheit.

Typical pedon of Taconic channery silt loam, in an area of Taconic-Rock outcrop complex, very steep, in the town of Northeast, about 50 feet north of a waterfall on the Brace Mountain Trail, about .5 miles east along the trail from the trail head at Quarry Drive:

A—0 to 3 inches; black (10YR 2/1) channery silt loam; weak fine granular structure; very friable; many fine and medium and common coarse roots; 20 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw—3 to 12 inches; yellowish brown (10YR 5/4) very channery silt loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; 40 percent rock fragments; strongly acid; abrupt wavy boundary.

R—12 inches; fractured and folded phyllite and quartz bedrock.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Rock fragments make up 15 to 35 percent of the volume of the A horizon and 30 to 60 percent of the volume of the B horizon. Rock fragments make up 45 to 65 percent of the volume of the C horizon, if present. Up to 15 percent of the surface may be covered with flagstones, stones, and boulders. The soil is very strongly acid or strongly acid throughout.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 1 to 3. Texture is silt loam or loam in the fine-earth fraction. Structure is weak fine or medium granular. Consistence is very friable or friable.

The B horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 6, with hue of 7.5YR occurring only in the upper part. Texture is silt loam or loam in the fine-earth fraction. Structure is weak or moderate very fine, fine, or medium subangular blocky. Consistence is very friable or friable.

The C horizon, where present, has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam or loam in the fine-earth fraction. Structure is platy or angular blocky or the horizon is massive. Consistence is firm or friable.

The bedrock is folded and fractured phyllite, schist, slate, or quartzite.

Udifluvents

Udifluvents consist of the very deep, excessively drained to moderately well drained soils on the most actively flooded areas of flood plains along major and secondary streams. These soils formed in recent alluvial deposits. Slopes range from 0 to 3 percent.

Udifluvents are mapped in a complex with poorer drained Fluvaquents. They are commonly near well drained Wappinger, moderately well drained Pawling, somewhat poorly drained Linlithgo, and poorly drained

and very poorly drained Wayland soils. Udifluvents have little or no profile development. All of these soils are on flood plains.

Udifluvents are in areas of the flood plain immediately adjacent to streams. Intermittent scouring and redeposition of sediments cause the composition and properties to differ from place to place. Because of the wide range in texture and other characteristics a typical pedon of Udifluvents is not provided.

The thickness of the surface layer and solum is 1 to 7 inches. The depth to bedrock is greater than 60 inches. Rock fragments, including gravel, channers, and cobbles, make up from 0 to 80 percent of the volume. Reaction ranges from slightly acid to very strongly acid. The organic matter content decreases irregularly with depth and is greater than 0.4 percent below a depth of 50 inches.

The surface layer has hue of 10YR to 5Y, value of 2 to 6, and chroma of 0 to 6. Texture is stratified layers of sand, loamy sand, sandy loam, loam, or silt loam in the fine-earth fraction.

The substratum has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 6. Texture is stratified layers of loamy sand, sandy loam, loam, or loam the fine-earth fraction. Some pedons have strata of sand.

Udorthents

Udorthents consist of very deep to shallow, somewhat excessively drained to moderately well drained soils in disturbed areas. These soils result from cutting and filling, especially in areas of urban development. Slopes are commonly less than 8 percent, but range to 25 percent.

Because of the wide range in characteristics a typical pedon of Udorthents is not provided. The most notable features of these soils are the absence of naturally formed horizons and the stratified appearance of the different layers.

Fill material is often greater than 20 inches thick over the original soil surface. Bedrock may be at any depth from 10 inches to more than 10 feet. Often there are abrupt textural changes caused by variations in the type of fill material used. Soil color is very variable and often is not a good indication of wetness.

The surface layer is generally soil material 6 to 20 inches thick. The hue, value, and chroma will vary depending on the origins of the materials. Texture ranges from loamy sand to clay. Reaction ranges from extremely acid to moderately alkaline.

In areas where soil material has been cut or filled for construction sites the substratum has hue of 5YR to 5Y, value of 2 to 7, and chroma of 0 to 8. Texture ranges from sandy loam through clay in the fine-earth fraction. Rock fragments make up from 0 to 60 percent of the volume. Reaction ranges from extremely acid to moderately alkaline.

In sites or former sites of landfills, non-soil material makes up the substratum, and the composition varies from site to site. It ranges from fractured slabs of concrete to car bodies and large appliances to household garbage. Some areas are filled with tree stumps, limbs, shrubs, and similar vegetative debris.

In areas where fill has been placed over a naturally occurring wet soil, the resulting Udorthent will have a wet substratum and are dominantly moderately well drained.

Unadilla Series

The Unadilla series consists of very deep, well drained, moderately permeable soils on glacial lacustrine plains. These soils formed in silty glaciolacustrine sediments. Slopes are complex and irregular and range from 2 to 6 percent.

Unadilla soils are mapped near moderately well drained Scio soils and somewhat poorly drained Raynham soils. In places, Unadilla soils are also near Hudson and Vergennes soils. Unadilla soils formed in silty glaciolacustrine sediments, Hudson soils formed in fine glaciolacustrine sediments, and Vergennes soils formed in very fine glaciolacustrine sediments.

Typical pedon of Unadilla silt loam, undulating, in the town of Red Hook, about 35 feet south of Stonybrook Street, about .4 miles west of the intersection with Route 9G:

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; few fine roots; moderately acid; abrupt smooth boundary.

Bw1—9 to 19 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

Bw2—19 to 28 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; weak coarse subangular blocky structure; friable; occasional streaks of light yellowish brown (10YR 6/4) silt; strongly acid; clear smooth boundary.

C—28 to 70 inches, olive brown (2.5Y 4/4) very fine sandy loam; massive within varves; friable; segregated pockets of grayish brown (2.5Y 6/2) very fine sand; thin lenses of clay at 35 inches and 41 inches; strongly acid.

The thickness of the solum ranges from 20 to 50 inches. Depth to bedrock or strongly contrasting materials is greater than 40 inches. Rock fragments

make up 0 to 5 percent of the volume of the solum and 0 to 60 percent of the volume of the substratum. Some pedons have mottles below a depth of 24 inches.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam or very fine sandy loam. Structure is weak or moderate granular. Consistence is very friable, friable, or firm. Reaction ranges from very strongly acid to moderately acid, unless limed.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 4 to 8. Texture is silt loam or very fine sandy loam. Some pedons have lenses of loamy very fine sand or fine sand. The horizon is massive, or structure is weak or moderate subangular blocky or prismatic. Consistence is very friable, friable, or firm. Reaction ranges from very strongly acid to moderately acid. Some pedons have a thin E horizon just above the B horizon.

The C horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam, very fine sandy loam, or loamy very fine sand.

Some pedons have a lithologic discontinuity below 40 inches which has texture that is the gravelly or very gravelly analogue of fine sandy loam, loamy fine sand, loamy sand, or sand.

The C or 2C horizon is massive or single grain, or the structure is weak or moderate platy. Consistence is loose, very friable, friable, or firm. Reaction ranges from strongly acid to mildly alkaline.

Vergennes Series

The Vergennes series consists of very deep, moderately well drained, slow or moderately slow permeable over slow or very slow permeable soils on broad glacial lacustrine plains and a few estuary channels. These soils formed in calcareous very fine glaciolacustrine sediments. Slopes are simple and smooth from 3 to 15 percent and are complex and irregular from 15 to 45 percent.

Vergennes soils are mapped in an undifferentiated group with Hudson soils. Vergennes soils formed in very fine glaciolacustrine sediments, and Hudson soils formed in fine glaciolacustrine sediments. Vergennes soils are in a drainage sequence with somewhat poorly drained Kingsbury and Rhinebeck soils and very poorly drained Livingston soils. In places, Vergennes soils are also near Unadilla soils. Unadilla soils formed in silty glaciolacustrine sediments.

Typical pedon of Vergennes silty clay loam, in an area of Hudson and Vergennes soils, 3 to 8 percent slopes, in the town of Red Hook, about .3 miles south of County Route 78, about .5 miles west of the intersection with Mongomery Street:

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam; moderate medium and coarse granular structure; friable, plastic and sticky; many fine roots; moderately acid; clear smooth boundary.

B/E—6 to 11 inches; light olive brown (2.5Y 5/4) silty clay (Bt), light brownish gray (10YR 6/2) interfingers of silt loam (E); moderate medium angular blocky structure; firm, plastic and sticky; many fine roots; slightly acid; clear smooth boundary.

Bt1—11 to 20 inches; grayish brown (2.5Y 5/2) clay; weak coarse prismatic structure parting to strong thick platy structure; firm, plastic and sticky; many fine roots; common clay films; slightly acid; clear smooth boundary.

Bt2—20 to 28 inches; light olive brown (2.5Y 5/4) clay; common fine distinct yellowish brown (10YR 5/6) and few fine distinct olive gray (5Y 5/2) mottles; coarse prismatic structure; firm, plastic and sticky; common fine roots along faces of peds; common clay films; slightly acid; clear smooth boundary.

BC—28 to 37 inches; light olive brown (2.5Y 5/4 and 7.5YR 5/4) clay and yellowish brown (10YR 5/4) silt; strong very thick platy structure becoming varved in the lower part; very firm; common roots along faces of peds; mildly alkaline; abrupt smooth boundary.

Cg—37 to 80 inches; grayish brown (2.5Y 5/2) and brown (7.5YR 5/4) clay varves interbedded with thin yellowish brown (10YR 5/4) silt varves; massive within thickly varved layers; very firm; moderately alkaline; slightly effervescent.

The thickness of the solum ranges from 14 to 40 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up from 0 to 2 percent of the volume. Reaction ranges from very strongly acid to neutral in the upper part of the solum and from moderately acid to mildly alkaline in the lower part of the solum. Reaction in the substratum is moderately alkaline. Depth to free carbonates ranges from 18 to 40 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4. Texture is clay, silty clay, silty clay loam, or silt loam.

The E horizon, where present, has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. Texture is similar to the Ap.

The B/E horizon has colors and textures similar to the Bt and E horizons.

The Bt horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 1 to 4. Texture is clay.

Some pedons have a BC horizon.

The C horizon has hue of 7.5YR to 5Y, value of 3 to

5, and chroma of 1 to 4. Texture is clay with silt and silty clay varves.

Wappinger Series

The Wappinger series consists of very deep, well drained, moderately permeable over moderately rapid or rapid permeable soils on flood plains. These soils formed in alluvium. Slopes range from 0 to 3 percent.

Wappinger soils are mapped near moderately well drained Pawling soils, somewhat poorly drained Linlithgo soils, and poorly drained and very poorly drained Wayland soils. Wappinger soils are also near Fluvaquents and Udifluvents, which have greatly varying drainage, horizonation, and other characteristics. All of these soils are on flood plains.

Typical pedon of Wappinger loam, in the town of LaGrange, about 0.5 miles south of NY Route 55 and 2,475 feet west of Titusville Road, about 300 feet east of Wappingers Creek:

Ap—0 to 9 inches; dark yellowish brown (10YR 3/4) loam; weak medium granular structure; friable; few fine roots; moderately acid; abrupt smooth boundary.

Bw1—9 to 13 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

Bw2—13 to 21 inches; dark yellowish brown (10YR4/4) loam; weak medium and coarse subangular blocky structure; friable; few fine roots; slightly acid; clear wavy boundary.

Bw3—21 to 33 inches, dark yellowish brown (10YR 4/4) loam; many brownish stains; weak coarse subangular blocky structure; very friable; many fine roots; moderately acid; abrupt wavy boundary.

C1—33 to 37 inches; dark brown (10YR 4/3) sandy loam; common fine faint dark yellowish brown (10YR 4/4) and many medium faint brown (10YR 5/3) mottles; massive; very friable; 5 percent rock fragments; moderately acid; abrupt wavy boundary.

2C2—37 to 72 inches; dark brown (10YR 4/3) extremely gravelly sand; single grain; loose; 65 percent rock fragments; moderately acid.

The thickness of the solum ranges from 25 to 45 inches. Depth to bedrock is greater than 60 inches. Rock fragments make up 0 to 10 percent of the volume of the solum and the upper part of the substratum and from 15 to 70 percent of the volume of the lower part of the substratum. Unless limed, reaction is strongly acid or moderately acid above 20 inches and ranges from moderately acid to neutral, below 20 inches.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. Texture is silt loam or loam. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. Texture is loam silt loam, loam, or fine sandy loam. Structure is weak or moderate, fine to coarse subangular blocky or granular. Consistence is friable or very friable.

The C1 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. Some pedons have mottles with hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is sandy loam or fine sandy loam.

The 2C2 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4, and is sometimes mottled. Texture is loamy sand or sand in the fine-earth fraction. It is massive or single grain. Consistence is very friable or loose.

Wayland Series

The Wayland series consists of very deep, poorly drained and very poorly drained, moderately slow to moderately permeable over slow permeable soils on flood plains. These soils formed in recent alluvium. Slopes range from 0 to 3 percent.

Wayland soils are mapped near well drained Wappinger soils, moderately well drained Pawling soils, and somewhat poorly drained Linlithgo soils. Wayland soils are also near Fluvaquents and Udifluvents, which have greatly varying drainage, horizonation, and other characteristics. All of these soils are on flood plains.

Typical pedon of Wayland silt loam, in the town of Rhinebeck, about 100 feet north of Hook Road, 350 feet east of the intersection with Lower Hook and Upper Hook Roads, in a wooded area:

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, gray (5YR 5/1) dry; moderate fine and medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bg1—9 to 13 inches; gray (10YR 5/1) silt loam; weak coarse prismatic structure; friable; common fine roots; neutral; clear wavy boundary.

Bg2—13 to 21 inches; gray (5Y 5/1) silty clay loam; many medium prominent yellowish brown (10YR 5/6) and few fine prominent dark brown (10YR 3/3) mottles; weak coarse prismatic structure; firm; few fine roots along faces of peds; neutral; clear wavy boundary.

Bg3—21 to 31 inches; gray (5Y 5/1) silt loam; many medium and coarse prominent yellowish brown (10YR 5/4) and common medium prominent yellowish brown (10YR 5/6) mottles; weak coarse

prismatic structure; firm; slightly sticky and slightly plastic; neutral; clear wavy boundary.

Cg—31 to 80 inches; gray (5Y 5/1) silt loam; many medium and coarse prominent yellowish brown (10YR 5/4) and common medium prominent yellowish brown (10YR 5/6) mottles; massive; firm; slightly sticky and slightly plastic; neutral; very slightly effervescent in the lower part.

The thickness of the silty deposits over stratified materials is greater than 36 inches. Depth to bedrock is greater than 60 inches. Depth to carbonates ranges from 24 to 60 inches. Rock fragments are commonly absent but can make up to 5 percent of the volume within a depth of 36 inches and up to 30 percent of the volume below 36 inches.

The A or Ap horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. Texture is silt loam or silty clay loam. Structure is moderate or strong, fine to coarse granular or subangular blocky structure.

The B horizon is up to 24 inches thick and has color and texture ranges similar to the C horizon. Structure is weak or moderate, fine or medium subangular blocky or weak or moderate coarse prismatic. Some pedons lack a B horizon.

The C horizon is neutral or has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 1 or 2, and it usually contains high chroma mottles. Texture is silt loam or silty clay loam. The horizon is massive, or structure is platy. Consistence is friable or firm.

The 2C horizon, where present, has color ranges similar to the C horizon. Texture is silt loam, loam, very fine sandy loam, or fine sandy loam in the fine-earth fraction.

Formation of the Soils

The first part of this section describes the factors of soil formation and relates them to the formation of the soils in the survey area. The second part defines the processes of soil horizon development as they relate to soil formation in Dutchess County.

Factors of Soil Formation

Soils are products of weathering and other physical and chemical processes that act on parent material. The properties of a soil at a given point on the earth depends on the combination of the following factors: the physical and chemical composition of the parent material; the climate; the plant and animal life; the topography; and time (Jenny, 1941). The relative influence of each of these factors differs from place to place, and each modifies the effect of the others. For example, the impact of climate over a given area is tempered by relief or parent material. In many areas, the influence of a single factor is dominant. Table 18 shows the relationship between the soil series in the county and their parent material, position on the landscape, and drainage.

Parent Material

Parent material is the unconsolidated earthy material in which soils are formed. It influences the physical, chemical, and mineralogical composition of the soils. It also influences the rate at which soil forming processes will proceed.

Most of the soils in Dutchess County formed in deposits left as a result of glaciation. Glacial till is the most extensive type of parent material. Less extensive are glacial outwash, alluvial deposits, lacustrine, and organic deposits (fig. 12).

Soils formed in glacial till have a wide range of characteristics as a result of the heterogeneous nature of the till, its rock and soil particles. Some soils such as Bernardston, Pittstown, and Punsit, which are formed in very deep glacial till deposits, have a dense substratum. Other soils such as Charlton and Stockbridge, which formed in very deep glacial till, do not have a dense layer. In some places, the glacial till is moderately deep or shallow over bedrock. Nassau is an example of a soil, that is shallow to shale. Cardigan is moderately deep to shale. Hollis soils are shallow and Chatfield soils are moderately deep to granite, gneiss, or schist. Farmington and Galway soils formed over dolomitic limestone. Macomber and Taconic soils, with a mean annual soil temperature less than 47 degrees F, formed in till over phyllite, slate, or quartzite. Some areas have bedrock exposed at the surface. Rock outcrop is mapped in these areas.

As the glacial ice melted, large quantities of meltwaters transported and sorted soil and rock debris. This material is referred to as glacial outwash and was redeposited in layers of sand and gravel on outwash plains and terraces. Hoosic and Knickerbocker are examples of soils formed in this material. These soils are coarse textured.

At one time, some of the valleys in the western part of the county contained glacial lakes where glacial meltwater was impounded. Most of the stone-free sediment deposited in the still lake waters was clayey or silty. Kingsbury, Rhinebeck, and Raynham are examples of soils that formed in these fine textured deposits.

In more recent times, overflowing streams have deposited fresh, dark alluvial material on flood plains. This material tends to be variable in texture. Soils formed in this material show weak soil profile development. Wappinger and Pawling are examples of alluvial soils.

Soils formed in organic deposits are mainly in closed depressions and along the Hudson River. Carlisle and Palms soils, for example, formed in well decomposed remains of trees and other plants.

Topography

The shape of the land surface, commonly called the lay of the land; the slope; and the position of the land surface as related to the water table have a great influence on the formation of the soils. Soils that formed in convex positions, where little or no runoff accumulates, are generally well drained and do not contain gray mottles in the subsoil. Examples of soils in this category are Stockbridge and Charlton. In level or slightly depressional areas, the water table is

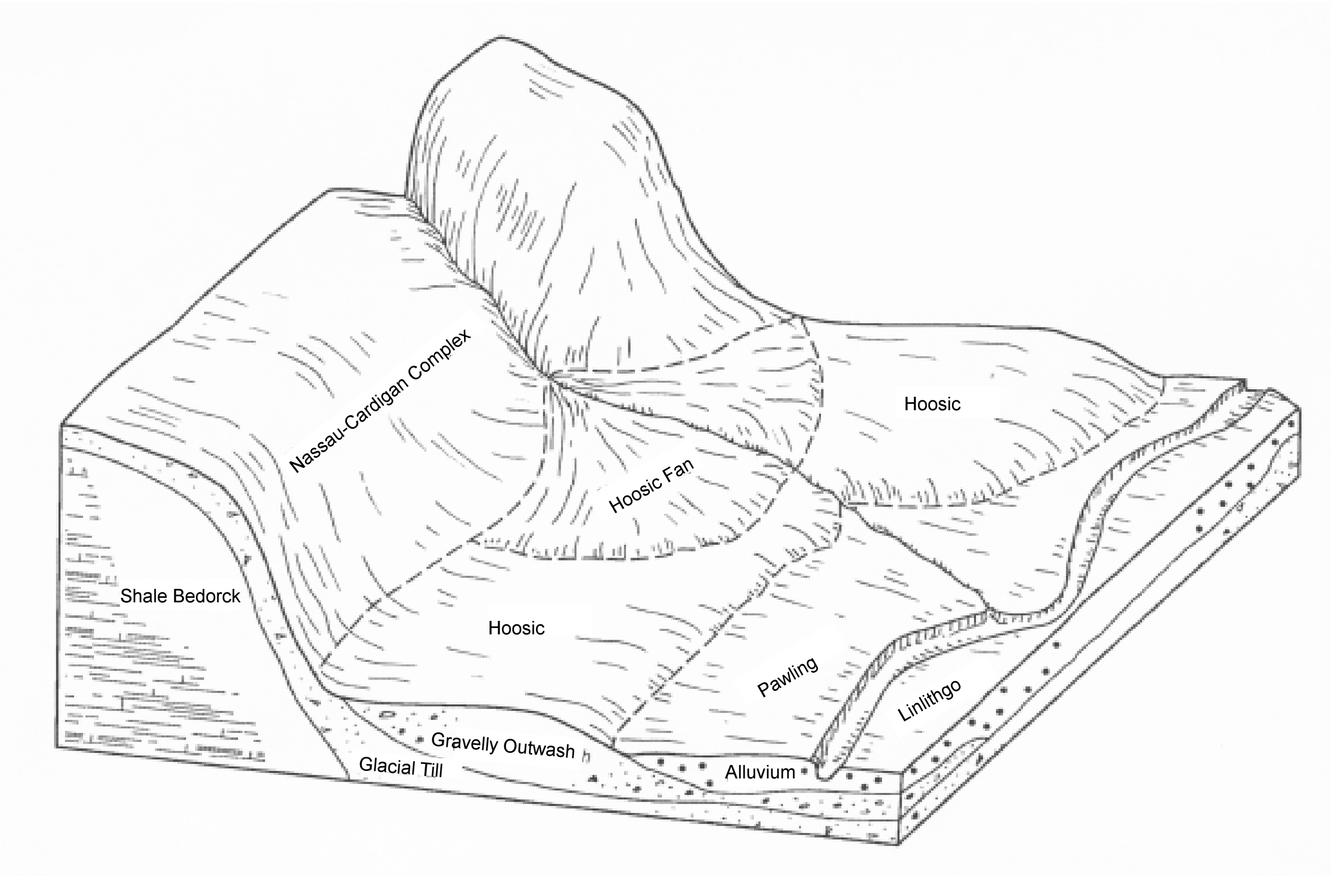

Figure 12.—Typical pattern of soils and underlying material in upland areas dominated by Shale-Bedrock and Valley Floors with Acid Outwash soils and Alluvial soils.

usually closer to the surface for extended periods. This results in gray mottling close to the surface and often, accumulation of sediment at the surface.

Some soils are wet because they occupy a position where the water table is at or near the surface for long periods. This wetness is evidenced by a thick, dark surface layer and strongly mottled or gray subsoil. Sun soils are an example.

Climate

Climate, in particular temperature and precipitation, is one of the most influential of the soil forming factors. It determines to a large degree the kind of weathering processes that occur. It also affects the growth and kind of vegetation and the leaching and translocation of weathered materials.

Dutchess County has a humid, temperate climate that promotes the development of moderately weathered, leached soils. The difference in elevation between most of the county, which is in the Hudson Valley and the northeastern part of the county, which is on the Taconic Mountains, results in two soil temperature regimes, mesic and frigid. Mesic soils have a mean annual soil temperature greater than 47 degrees F and frigid soils have a mean annual soil temperature less than 47 degrees F. Cooler temperatures tend to slow down the weathering processes and shorten the growing season. More detailed and specific data on the climate of Dutchess County are in the climate section under “General Nature of the County”.

Plant and Animal Life

All living organisms, including plants, animals, bacteria, and fungi, influence soil formation. Vegetation is generally responsive for the amount of organic matter and nutrients in the soil and for the color and structure of the surface layer. Earthworms and burrowing animals help to keep the soil porous and more permeable for air and water. Their waste products cause aggregations of soil particles and improve soil structure. Bacteria and fungi decompose vegetation, which results in the release of nutrients.

This survey area was originally a forest of northern

hardwoods and pines. The loss of nutrients through leaching is slow under hardwoods because they take up large quantities of bases (nutrients) and return much of them to the soil surface each year as leaf litter. Conifers, such as pines, do not use large amounts of nutrients; therefore, leaching is more rapid than it is under hardwoods.

Because the rooting depth is shallow in many of the upland soils, trees are susceptible to windthrow, which has caused much mixing of the soil materials.

Human activity through clearing trees and cultivating the land, has also influenced changes that occur in soils. This has added nutrients by fertilization, has mixed some soil horizons by plowing, and has accelerated erosion in many areas.

Time

The degree of profile development not only reflects the age of a soil, but it also reflects the influence of other factors. In geological terms, the deposits in which soils formed in the survey area are relatively young, being deposited when the last glacier receded about 10,000 to 15,000 years ago. The soils have not all reached the same stage of soil profile development, because the other soil forming factors also influence the rate of soil profile development. The time factor is constant within the county; the difference in the appearance and the depth of the weathering is more a function of the differences in the parent material.

An immature soil is one that has not had enough time to develop distinct horizons. Linlithgo and Fluvaquents are examples. They formed in recent alluvium, which is regularly being flooded, and more sediment deposited so the time for soil development is constantly interrupted and thin or irregular soil profiles develop.

Processes of Soil Formation

This section contains a brief explanation of soil horizon nomenclature and a discussion of the processes involved in soil horizon development as they relate to soil formation.

The soil-forming factors cause the formation of different layers, or soil horizons. These soil horizons can be viewed in a vertical cut of the soil, known as a soil profile. The soil profile extends from the surface downward into material that is little altered by the soil-forming processes. Most soils contain three major horizons, called A, B, and C horizons.

Several processes cause the formation of soil horizons. They include the accumulation of organic matter, the leaching of soluble salts and minerals, the translocation of clay minerals, the reduction and transfer of iron, and the formation of dense and compact layers in the subsoil (Simonson, 1959).

The accumulation of organic matter takes place as plant residue decomposes. This process darkens the surface layer and helps to form the A1 horizon. It takes a long time to replace this organic matter once it has been lost. The organic matter content of the surface layer of soils in the survey area averages about 4 percent.

For soils to develop a distinct subsoil, some of the lime and other soluble salts must be leached before other soil processes such as translocation of clay minerals can take place. Factors that affect leaching include the kinds of salts originally present, the rate and depth of percolation, and the texture of the soil.

One of the more important processes of soil horizon development in some of the soils is the translocation of silicate clay minerals. The amount of clay minerals in a soil is inherent in the parent material, but clay content varies from one soil horizon to another. Clay particles are transported (eluviation) downward from the A horizon and redeposited (illuviation) in the B horizon as clay films on ped faces, as linings along pores and root channels, and as coatings on some coarse fragments. In some soils, an E horizon has formed by considerable eluviation of clay minerals to the B horizon. The Hudson soil is an example of a soil where the clay content is higher in the B horizon than in the A horizon because of translocation.

The reduction and transfer of iron compounds occur mainly in the wetter, more poorly drained soils. This process is known as gleying. In poorly drained and very poorly drained soils, such as Halsey soils, the grayish subsoil indicated the reduction of iron. In moderately well drained and somewhat poorly drained soils, such as Punsit, yellowish brown and reddish brown mottles indicate the segregation of iron compounds. A bright colored, unmottled subsoil indicates a well drained soil where no reduction and transfer of iron have taken place. Dutchess soils are an example.

References

(1)American Association of State Highway [and Transportation] Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vols., illus.

(2) American Society for Testing and Materials. 1974. Method for classifications of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(3) Cline, M.G. and Marshall, R.L., 1976. General Soil Map of New York State, Cornell University Agriculture Experiment Station.

(4) Dutchess County Department of Planning and the Dutchess County Environmental Management Council, 1985. Dutchess County Cooperative Extension Association, pp. 196, illus.

(5) Fisher, D.W., et al, 1970. Geologic Map of New York, "Lower Hudson Sheet", University of the State of New York, The State Education Department, Albany, NY.

(6) Isachsen, Y.W., et al, 1991. Geology of New York "A Simplified Account", Educational Leaflet No. 28, New York State Museum/Geological Survey, Albany, NY.

(7) Jenny, Hans. 1941. Factors of soil formation. McGraw-Hill Book Company, Inc., 281 pp., illus.

(8) Simonson, Roy W. 1959. Outline of a generalized theory of soil genesis. Soil Sci. Soc. Am. Proc. 23:152-156, illus.

(9) United States Department of Agriculture. 1951. Soil Survey Manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus.

(10) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(11) United States Department of Agriculture. 1982. Forest Statistics for New York, Resource Bulletin NE-71. U.S. Dep. Agric., Forest Service Northeastern Section. New York State Department of Environmental Conservation.

(12) United States Department of Agriculture in cooperation with the Cornell University Agricultural Experiment Station. 1955. Soil Survey of Dutchess County, New York. Series 1939, No. 23, 178 pp., illus.

(13) United States Department of Commerce, Bureau of the Census. 1991. Summary Population and Housing Characteristics, New York (cph-1-34).

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	more than 5.2

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Bajada. A broad alluvial slope extending from the base of a mountain range out into a basin and formed by coalescence of separate alluvial fans.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque. A semicircular, concave, bowllike area that has steep faces primarily resulting from glacial ice and snow abrasion.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Congeliturbate. Soil material disturbed by frost action.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing

crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cuesta. A hill or ridge that has a gentle slope on one side and a steep slope on the other; specifically, an asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is

parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and

equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Hemic soil material (mucky peat). Organic soil

material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. An irregular, short ridge or hill of stratified glacial drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site.

Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a

percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and

behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1951-1988 at Millbrook, NY)

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average daily	Temperature: 2 years in 10 will have-- Maximum temperature higher than--	Temperature: 2 years in 10 will have-- Minimum temperature lower than--	Temperature: Average number of growing degree days*	Precipitation: Average	Precipitation: 2 years in 10 will have-- Less than--	Precipitation: 2 years in 10 will have-- More than--	Precipitation: Average number of days with 0.10 inch or more	Precipitation: Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In	In	In
January---	32.8	12.6	22.7	58	-17	9	2.72	1.25	3.81	7	13.9
February--	36.3	15.2	25.8	58	-13	9	2.54	1.15	3.57	6	10.4
March-----	45.0	24.9	35.0	72	2	46	3.04	1.58	4.32	7	9.8
April-----	58.1	34.9	46.5	83	16	207	3.44	1.78	4.58	8	2.2
May-------	69.7	44.5	57.1	89	26	530	3.54	1.85	5.01	8	.2
June------	77.0	53.0	65.0	91	35	750	3.86	1.53	5.66	7	.0
July------	81.8	57.7	69.8	94	41	924	3.95	2.10	5.57	7	.0
August----	80.0	56.4	68.2	92	39	874	3.88	1.82	5.49	7	.0
September-	72.5	48.8	60.7	90	29	621	3.48	1.77	4.87	6	.0
October---	62.6	38.2	50.4	81	20	327	3.19	1.66	4.60	6	.1
November--	49.8	29.9	39.9	71	10	85	3.37	1.76	4.70	7	2.4
December--	37.3	19.0	28.2	61	-9	21	3.30	1.52	4.68	7	9.7
Yearly:											
Average--	58.6	36.3	47.4	---	---	---	---	---	---	---	---
Extreme--	---	---	---	94	-19	---	---	---	---	---	---
Total----	---	---	---	---	---	4403	40.31	33.56	46.93	83	48.7

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1951-1988 at Millbrook, NY)

Probability	Temperature 24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 25	May 12	May 30
2 years in 10 later than--	Apr. 21	May 6	May 23
5 years in 10 later than--	Apr. 12	Apr. 25	May 10
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 9	Sep. 27	Sep. 12
2 years in 10 earlier than--	Oct. 14	Oct. 3	Sep. 18
5 years in 10 earlier than--	Oct. 24	Oct. 13	Sep. 29

Table 3.—Growing Season

(Recorded in the period 1951-1988 at Millbrook, NY)

Probability	Daily minimum temperature during growing season: Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	177	147	116
8 years in 10	183	155	125
5 years in 10	194	170	141
2 years in 10	205	185	158
1 year in 10	211	193	167

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
BeB	Bernardston silt loam, 3 to 8 percent slopes	2,490	0.5
BeC	Bernardston silt loam, 8 to 15 percent slopes	8,265	1.6
BeD	Bernardston silt loam, 15 to 25 percent slopes	5,070	1.0
BeE	Bernardston silt loam, 25 to 45 percent slopes	385	0.1
BgB	Bernardston-Urban land complex, 3 to 8 percent slopes	460	0.1
Ca	Canandaigua silt loam, neutral substratum	5,510	1.0
Cc	Carlisle muck	7,105	1.3
ChB	Charlton loam, 3 to 8 percent slopes	1,265	0.2
ChC	Charlton loam, 8 to 15 percent slopes	3,750	0.7
ChD	Charlton loam, 15 to 25 percent slopes	2,090	0.4
ChE	Charlton loam, 25 to 45 percent slopes	436	0.1
ClC	Charlton loam, 8 to 15 percent slopes, very stony	797	0.2
ClD	Charlton loam, 15 to 25 percent slopes, very stony	440	0.1
ClE	Charlton loam, 25 to 45 percent slopes, very stony	470	0.1
CrB	Charlton-Chatfield complex, undulating, rocky	1,170	0.2
CrC	Charlton-Chatfield complex, rolling, rocky	4,520	0.9
CrD	Charlton-Chatfield complex, hilly, rocky	3,272	0.6
CrE	Charlton-Chatfield complex, steep, rocky	2,140	0.4
CtB	Chatfield-Hollis complex, undulating, very rocky	1,004	0.2
CtC	Chatfield-Hollis complex, rolling, very rocky	8,640	1.6
CtD	Chatfield-Hollis complex, hilly, very rocky	8,567	1.6
CuA	Copake gravelly silt loam, nearly level	3,000	0.6
CuB	Copake gravelly silt loam, undulating	4,017	0.8
CuC	Copake gravelly silt loam, rolling	4,015	0.8
CuD	Copake gravelly silt loam, hilly	1,025	0.2
CuE	Copake gravelly silt loam, 25 to 45 percent slopes	228	*
CwA	Copake channery silt loam, fan, 0 to 3 percent slopes	745	0.1
CwB	Copake channery silt loam, fan, 3 to 8 percent slopes	443	0.1
CxB	Copake-Urban land complex, undulating	245	*
DuB	Dutchess silt loam, 3 to 8 percent slopes	1,995	0.4
DuC	Dutchess silt loam, 8 to 15 percent slopes	3,572	0.7
DuD	Dutchess silt loam, 15 to 25 percent slopes	930	0.2
DwB	Dutchess-Cardigan complex, undulating, rocky	27,695	5.2
DwC	Dutchess-Cardigan complex, rolling, rocky	31,355	5.9
DwD	Dutchess-Cardigan complex, hilly, rocky	9,385	1.8
DxB	Dutchess-Cardigan-Urban land complex, undulating, rocky	2,892	0.5
DxC	Dutchess-Cardigan-Urban land complex, rolling, rocky	1,020	0.2
FcB	Farmington-Galway complex, undulating, very rocky	596	0.1
FcC	Farmington-Galway complex, rolling, very rocky	4,880	0.9
FcD	Farmington-Galway complex, hilly, very rocky	5,786	1.1
FeE	Farmington-Rock outcrop complex, steep	2,397	0.5
Ff	Fluvaquents-Udifluvents complex, frequently flooded	3,209	0.6
Fr	Fredon silt loam	4,340	0.8
GfB	Galway-Farmington complex, undulating, rocky	2,285	0.4
GfC	Galway-Farmington complex, rolling, rocky	5,890	1.1
GfD	Galway-Farmington complex, hilly, rocky	1,420	0.3
GlB	Galway-Farmington-Urban land complex, undulating, rocky	373	0.1
GlC	Galway-Farmington-Urban land complex, rolling, rocky	431	0.1
GsA	Georgia silt loam, 0 to 3 percent slopes	485	0.1
GsB	Georgia silt loam, 3 to 8 percent slopes	9,588	1.8
GsC	Georgia silt loam, 8 to 15 percent slopes	2,095	0.4
Ha	Halsey mucky silt loam	2,365	0.4
HeA	Haven loam, nearly level	2,880	0.5
HeB	Haven loam, undulating	952	0.2
Hf	Haven-Urban land complex	401	0.1

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
HoC	Hollis-Chatfield-Rock outcrop complex, rolling	4,135	0.8
HoD	Hollis-Chatfield-Rock outcrop complex, hilly	11,225	2.1
HoE	Hollis-Chatfield-Rock outcrop complex, steep	9,360	1.8
HoF	Hollis-Chatfield-Rock outcrop complex, very steep	17,535	3.3
HsA	Hoosic gravelly loam, nearly level	10,685	2.0
HsB	Hoosic gravelly loam, undulating	12,545	2.4
HsC	Hoosic gravelly loam, rolling	3,805	0.7
HsD	Hoosic gravelly loam, hilly	1,360	0.3
HsE	Hoosic gravelly loam, 25 to 45 percent slopes	687	0.1
HtA	Hoosic channery loam, fan, 0 to 3 percent slopes	545	0.1
HtB	Hoosic channery loam, fan, 3 to 8 percent slopes	1,065	0.2
HuA	Hoosic-Urban land complex, nearly level	1,365	0.3
HuB	Hoosic-Urban land complex, undulating	365	0.1
HvB	Hudson and Vergennes soils, 3 to 8 percent slopes	2,740	0.5
HvC	Hudson and Vergennes soils, 8 to 15 percent slopes	850	0.2
HvD	Hudson and Vergennes soils, hilly	799	0.2
HvE	Hudson and Vergennes soils, steep	1,580	0.3
Hy	Hydraquents and Medisaprists soils, ponded	570	0.1
Kn	Kingsbury and Rhinebeck soils	1,317	0.2
KrA	Knickerbocker fine sandy loam, nearly level	1,188	0.2
KrB	Knickerbocker fine sandy loam, undulating	2,135	0.4
KrC	Knickerbocker fine sandy loam, rolling	673	0.1
KrD	Knickerbocker fine sandy loam, hilly	440	0.1
KuA	Knickerbocker-Urban land complex, nearly level	723	0.1
KuB	Knickerbocker-Urban land complex, undulating	280	0.1
Ln	Linlithgo silt loam	840	0.2
Lv	Livingston silty clay loam	945	0.2
McC	Macomber-Taconic complex, rolling, very rocky,	573	0.1
MnA	Massena silt loam, 0 to 3 percent slopes	2,510	0.5
MnB	Massena silt loam, 3 to 8 percent slopes	4,340	0.8
NwB	Nassau-Cardigan complex, undulating, very rocky	8,160	1.5
NwC	Nassau-Cardigan complex, rolling, very rocky	31,765	6.0
NwD	Nassau-Cardigan complex, hilly, very rocky	44,325	8.4
NxE	Nassau-Rock outcrop complex, steep	14,310	2.7
NxF	Nassau-Rock outcrop complex, very steep	1,668	0.3
Pc	Palms muck	4,915	0.9
Pg	Pawling silt loam	3,735	0.7
Ps	Pits, gravel	1,847	0.4
Pu	Pits, quarry	935	0.2
PwB	Pittstown silt loam, 3 to 8 percent slopes	4,897	0.9
PwC	Pittstown silt loam, 8 to 15 percent slopes	1,910	0.4
PzA	Punsit silt loam, 0 to 3 percent slopes	580	0.1
PzB	Punsit silt loam, 3 to 8 percent slopes	1,899	0.4
Ra	Raynham silt loam	2,615	0.5
Sc	Scio silt loam	551	0.1
SkB	Stockbridge silt loam, 3 to 8 percent slopes	9,300	1.8
SkC	Stockbridge silt loam, 8 to 15 percent slopes	18,640	3.5
SkD	Stockbridge silt loam, 15 to 25 percent slopes	7,590	1.4
SkE	Stockbridge silt loam, 25 to 45 percent slopes	871	0.2
SmB	Stockbridge-Farmington complex, undulating, rocky	3,760	0.7
SmC	Stockbridge-Farmington complex, rolling, rocky	4,305	0.8
SmD	Stockbridge-Farmington complex, hilly, rocky	898	0.2
SrB	Stockbridge-Urban land complex, 3 to 8 percent slopes	422	0.1
Su	Sun silt loam	17,345	3.3

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
TmD	Taconic-Macomber-Rock outcrop complex, hilly	553	0.1
TrE	Taconic-Rock outcrop complex, steep	557	0.1
TrF	Taconic-Rock outcrop complex, very steep	1,108	0.2
Ud	Udorthents, smoothed	3,948	0.7
Ue	Udorthents, wet substratum	1,000	0.2
UnB	Unadilla silt loam, undulating	648	0.1
Ur	Urban land	3,052	0.6
W	Water, < 40 acres	4,330	0.8
We	Wappinger loam	2,030	0.4
Wy	Wayland silt loam	1,670	0.3
WZ	Water, census > 40 acres	13,600	2.6
	Total	527,700	100.0

* Less than 0.1 percent.

Table 5.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
BeB	Bernardston silt loam, 3 to 8 percent slopes
ChB	Charlton loam, 3 to 8 percent slopes
CuA	Copake gravelly silt loam, nearly level
CuB	Copake gravelly silt loam, undulating
CwA	Copake channery silt loam, fan, 0 to 3 percent slopes
CwB	Copake channery
DuB	Dutchess silt loam, 3 to 8 percent slopes
Fr	Fredon silt loam (where drained)
GsA	Georgia silt loam, 0 to 3 percent slopes
GsB	Georgia silt loam, 3 to 8 percent slopes
HeA	Haven loam, nearly level
HeB	Haven loam, undulating
KrA	Knickerbocker fine sandy loam, nearly level
KrB	Knickerbocker fine sandy loam, undulating
Ln	Linlithgo silt loam (where drained)
MnA	Massena silt loam, 0 to 3 percent slopes (where drained)
MnB	Massena silt loam, 3 to 8 percent slopes (where drained)
Pg	Pawling silt loam
PwB	Pittstown silt loam, 3 to 8 percent slopes
PzA	Punsit silt loam, 0 to 3 percent slopes (where drained)
PzB	Punsit silt loam, 3 to 8 percent slopes (where drained)
Ra	Raynham silt loam (where drained)
Sc	Scio silt loam
SkB	Stockbridge silt loam, 3 to 8 percent slopes
UnB	Unadilla silt loam, undulating
We	Wappinger loam

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
BeB Bernardston	IIe	120	20	80	4.0	---
BeC Bernardston	IIIe	100	16	75	3.5	---
BeD Bernardston	IVe	---	18	---	3.0	---
BeE Bernardston	VIIe	---	---	---	---	---
BgB** Bernardston-Urban land	---	---	---	---	---	---
Ca Canandaigua	IVw	---	---	---	---	---
Cc Carlisle	Vw	---	---	---	---	---
ChB Charlton	IIe	110	24	---	4.5	6.5
ChC Charlton	IIIe	110	22	---	4.0	6.5
ChD Charlton	IVe	---	18	---	3.5	---
ChE Charlton	VIIe	---	---	---	---	---
ClC, ClD Charlton	VIs	---	---	---	---	---
ClE Charlton	VIIs	---	---	---	---	---
CrB** Charlton-Chatfield, Rocky***	IIs	---	---	---	---	---
CrC** Charlton-Chatfield, Rocky***	IIIe	---	---	---	---	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
CrD**------------ Charlton-Chatfield, Rocky***	VIe	---	---	---	---	---
CrE**------------ Charlton-Chatfield, Rocky***	VIIe	---	---	---	---	---
CtB**------------ Chatfield-Hollis, very Rocky****	VIs	---	---	---	---	---
CtC**------------ Chatfield-Hollis, very Rocky****	VIs	---	---	---	---	---
CtD**------------ Chatfield-Hollis, very Rocky****	VIs	---	---	---	---	---
CuA-------------- Copake	I	120	24	100	4.5	8.5
CuB-------------- Copake	IIe	120	24	95	4.5	8.5
CuC-------------- Copake	IIIe	110	22	90	4.0	7.5
CuD-------------- Copake	VIe	90	19	65	3.5	6.5
CuE-------------- Copake	VIIe	---	---	---	---	---
CwA-------------- Copake	I	120	24	100	4.5	8.5
CwB-------------- Copake	IIe	120	24	95	4.5	8.5
CxB**------------ Copake-Urban land	---	---	---	---	---	---
DuB-------------- Dutchess	IIe	---	22	---	4.0	---
DuC-------------- Dutchess	IIIe	---	20	---	4.0	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
DuD------------- Dutchess	IVe	---	17	---	3.5	---
DwB**----------- Dutchess- Cardigan, Rocky***	IIs	---	---	---	---	---
DwC**----------- Dutchess- Cardigan, Rocky***	IIIe	---	---	---	---	---
DwD**----------- Dutchess- Cardigan, Rocky***	VIe	---	---	---	---	---
DxB**----------- Dutchess- Cardigan- Urban land	---	---	---	---	---	---
DxC**----------- Dutchess- Cardigan- Urban land	---	---	---	---	---	---
FcB**----------- Farmington- Galway, very Rocky****	VIs	---	---	---	---	---
FcC**----------- Farmington- Galway, very Rocky****	VIs	---	---	---	---	---
FcD**----------- Farmington- Galway, very Rocky****	VIs	---	---	---	---	---
FeE**----------- Farmington- Rock outcrop	VIIs	---	---	---	---	---
Ff-------------- Fluvaquents- Udifluvents	Vw	---	---	---	---	2.2
Fr-------------- Fredon	IIIw	80	16	60	3.0	5.7

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
GfB**: Galway-Farmington	IIs	---	---	---	---	---
GfC**: Galway-Farmington	IIIe	---	---	---	---	---
GfD**: Galway-Farmington	VIe	---	---	---	---	---
GlB**: Galway-Farmington-Urban land	---	---	---	---	---	---
GlC**: Galway-Farmington-Urban land	---	---	---	---	---	---
GsA: Georgia	IIw	---	23	---	4.0	---
GsB: Georgia	IIe	---	23	---	4.0	---
GsC: Georgia	IIIe	---	21	---	4.0	---
Ha: Halsey	Vw	---	---	---	2.5	5.0
HeA: Haven	I	---	24	---	4.5	8.5
HeB: Haven	IIe	---	24	---	4.5	8.5
Hf**: Haven-Urban land	---	---	---	---	---	---
HoC**: Hollis-Chatfield-Rock outcrop	VIs	---	---	---	---	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
HoD**----------- Hollis- Chatfield- Rock outcrop	VIs	---	---	---	---	---
HoE**, HoF**---- Hollis- Chatfield- Rock outcrop	VIIs	---	---	---	---	---
HsA------------- Hoosic	IIIs	60	12	50	3.5	6.5
HsB------------- Hoosic	IIIs	60	12	50	3.5	6.5
HsC------------- Hoosic	IIIe	50	10	45	3.5	6.5
HsD------------- Hoosic	VIe	---	---	---	2.5	6.5
HsE------------- Hoosic	VIIe	---	---	---	---	---
HtA------------- Hoosic	IIIs	---	18	---	3.0	7.5
HtB------------- Hoosic	IIIs	---	18	---	3.0	7.5
HuA**----------- Hoosic-Urban land	---	---	---	---	---	---
HuB**----------- Hoosic-Urban land	---	---	---	---	---	---
HvB------------- Hudson and Vergennes	IIe	---	20	---	---	---
HvC------------- Hudson and Vergennes	IIIe	---	17	---	---	---
HvD------------- Hudson and Vergennes	IVe	---	---	---	---	---
HvE------------- Hudson and Vergennes	VIe	---	---	---	---	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
Hy: Hydraquents and Medisaprists	Vw	---	---	---	---	---
Kn: Kingsbury and Rhinebeck	IIIw	83	17	---	3.5	5.8
KrA: Knickerbocker	IIs	---	18	---	3.0	7.5
KrB: Knickerbocker	IIs	---	18	---	3.0	7.5
KrC: Knickerbocker	IIIe	---	16	---	3.0	7.5
KrD: Knickerbocker	VIe	---	---	---	2.5	6.5
KuA**: Knickerbocker-Urban land	---	---	---	---	---	---
KuB**: Knickerbocker-Urban land	---	---	---	---	---	---
Ln: Linlithgo	IIIw	125	25	80	3.5	8.5
Lv: Livingston	Vw	---	---	---	---	---
McC**: Macomber-Taconic	VIs	---	---	---	---	---
MnA, MnB: Massena	IIIw	90	18	---	4.0	6.5
NwB**: Nassau-Cardigan	VIs	---	---	---	---	---
NwC**: Nassau-Cardigan	VIs	---	---	---	---	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
NwD**: Nassau-Cardigan	VIs	---	---	---	---	---
NxE**, NxF**: Nassau-Rock outcrop	VIIs	---	---	---	---	---
Pc: Palms, maat<50	Vw	---	---	---	---	---
Pg: Pawling	IIw	120	---	80	3.5	8.5
Ps**: Pits, gravel	---	---	---	---	---	---
Pu**: Pits, quarry	---	---	---	---	---	---
PwB: Pittstown	IIe	---	20	---	3.5	---
PwC: Pittstown	IIIe	---	18	---	3.5	---
PzA: Punsit	IIIw	---	16	---	3.0	5.5
PzB: Punsit	IIIw	---	16	---	3.0	5.5
Ra: Raynham	IIIw	---	---	---	---	---
Sc: Scio	IIw	110	22	85	3.5	8.5
SkB: Stockbridge	IIe	---	24	---	4.5	---
SkC: Stockbridge	IIIe	---	22	---	4.5	---
SkD: Stockbridge	IVe	---	20	---	4.0	---
SkE: Stockbridge	VIe	---	---	---	---	---
SmB**: Stockbridge-Farmington	IIe	---	---	---	---	---

See footnote at end of table.

Table 6.—Land Capability Classes and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Grass-legume hay	Pasture
		Bu	Tons	Bu	Tons	AUM*
SmC**----------- Stockbridge-Farmington	IIIe	---	---	---	---	---
SmD**----------- Stockbridge-Farmington	VIe	---	---	---	---	---
SrB**----------- Stockbridge-Urban land	---	---	---	---	---	---
Su-------------- Sun	Vw	---	---	---	---	---
TmD**----------- Taconic-Macomber-Rock outcrop	VIs	---	---	---	---	---
TrE**, TrF**---- Taconic-Rock outcrop	VIIs	---	---	---	---	---
Ud**------------ Udorthents	---	---	---	---	---	---
Ue**------------ Udorthents	---	---	---	---	---	---
UnB------------- Unadilla	IIe	120	24	75	4.0	6.5
Ur**------------ Urban land	---	---	---	---	---	---
W**. Water						
We-------------- Wappinger	I	120	---	80	3.5	8.5
Wy-------------- Wayland	Vw	---	---	---	---	---
WZ**. Water	---					

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

*** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.

**** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 7.—Capability Classes and Subclasses

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass) Erosion (e)	Wetness (w)	Soil problem
		Acres	Acres	Acres
I	8,867	---	---	---
II	81,339	42,095	4,771	34,473
III	115,670	75,005	15,825	24,840
IV	21,989	16,479	5,510	---
V	34,915	---	34,915	---
VI	151,697	20,251	---	131,446
VII	50,932	3,491	---	47,441
VIII	---	---	---	---

Table 8.—Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
BeB, BeC--------Bernardston	3A	Slight	Slight	Slight	Moderate	Northern red oak---- Eastern white pine-- Sugar maple--------- Eastern hemlock-----	55 65 65 65	3 8 3 --	Eastern white pine, eastern hemlock, white spruce, Douglas-fir, Fraser fir.
BeD-------------Bernardston	3R	Moderate	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple--------- Eastern hemlock-----	55 65 65 65	3 8 3 --	Eastern white pine, eastern hemlock, white spruce, Douglas-fir, Fraser fir.
BeE-------------Bernardston	3R	Severe	Severe	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple--------- Eastern hemlock-----	55 65 65 65	3 8 3 --	Eastern white pine, eastern hemlock, white spruce, Douglas-fir, Fraser fir.
BgB**:									
Bernardston----	3A	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple--------- Eastern hemlock-----	55 65 65 65	3 8 3 --	Eastern white pine, eastern hemlock, white spruce, Douglas-fir, Fraser fir.
Urban land.									
Ca--------------Canandaigua	3W	Slight	Severe	Severe	Severe	Red maple----------- Eastern white pine--	65 65	3 8	Eastern white pine, white spruce.
Cc--------------Carlisle	2W	Slight	Severe	Severe	Severe	Red maple----------- White ash----------- Green ash----------- Quaking aspen------- Swamp white oak----- Silver maple--------	56 --- --- --- --- 82	2 -- -- -- -- 2	
ChB, ChC--------Charlton	3A	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine------------ Red spruce---------- Red maple----------- Shagbark hickory---- Sugar maple---------	65 65 70 50 55 --- 55	3 8 9 8 2 -- 2	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
ChD------------- Charlton	3R	Moderate	Moderate	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
ChE------------- Charlton	3R	Severe	Severe	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
ClC------------- Charlton	3A	Slight	Slight	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
ClD------------- Charlton	3R	Moderate	Moderate	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
ClE------------- Charlton	3R	Severe	Severe	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
CrB**, CrC**:									
Charlton-------	3A	Slight	Slight	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
CrB**, CrC**:									
Chatfield------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	
Rock outcrop***									
CrD**:									
Charlton-------	3R	Moderate	Moderate	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
Chatfield------	3R	Slight	Moderate	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	
Rock outcrop***									
CrE**:									
Charlton-------	3R	Severe	Severe	Slight	Slight	Northern red oak----	65	3	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Eastern white pine--	65	8	
						Red pine------------	70	9	
						Red spruce----------	50	8	
						Red maple-----------	55	2	
						Shagbark hickory----	---	--	
						Sugar maple---------	55	2	
Chatfield------	3R	Moderate	Severe	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	
Rock outcrop***									
CtB**, CtC**:									
Chatfield------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
CtB**, CtC**:									
Hollis	2D	Slight	Slight	Moderate	Severe	Northern red oak	47	2	Eastern white pine.
						Eastern white pine	55	6	
						Sugar maple	56	2	
Rock outcrop****									
CtD**:									
Chatfield	3R	Slight	Moderate	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak	70	4	
						White ash	75	3	
Hollis	2D	Moderate	Moderate	Moderate	Severe	Northern red oak	47	2	Eastern white pine.
						Eastern white pine	55	6	
						Sugar maple	56	2	
Rock outcrop ****									
CuA, CuB, CuC Copake	8A	Slight	Slight	Slight	Slight	Eastern white pine	65	8	Eastern white pine, Austrian pine, European larch, Norway spruce.
						Northern red oak	60	3	
						Sugar maple	55	2	
CuD Copake	8R	Moderate	Moderate	Slight	Slight	Eastern white pine	65	8	Eastern white pine, Austrian pine, European larch, Norway spruce.
						Northern red oak	60	3	
						Sugar maple	55	2	
CuE Copake	8R	Severe	Severe	Slight	Slight	Eastern white pine	65	8	Eastern white pine, Austrian pine, European larch, Norway spruce.
						Northern red oak	60	3	
						Sugar maple	55	2	
CwA, CwB Copake	8A	Slight	Slight	Slight	Slight	Eastern white pine	65	8	Eastern white pine, Austrian pine, European larch, Norway spruce.
						Northern red oak	60	3	
						Sugar maple	55	2	
CxB**:									
Copake	8A	Slight	Slight	Slight	Slight	Eastern white pine	65	8	Eastern white pine, Austrian pine, European larch, Norway spruce.
						Northern red oak	60	3	
						Sugar maple	55	2	
Urban land.									

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
DuB, DuC: Dutchess	3A	Slight	Slight	Slight	Slight	Sugar maple	60	3	Eastern white pine, red pine.
						Northern red oak	62	3	
						Eastern white pine	66	8	
						White oak	60	3	
						Hickory	---	--	
						Eastern hemlock	---	--	
DuD: Dutchess	3R	Moderate	Moderate	Slight	Slight	Sugar maple	60	3	Eastern white pine, red pine.
						Northern red oak	62	3	
						Eastern white pine	66	8	
						White oak	60	3	
						Hickory	---	--	
						Eastern hemlock	---	--	
DwB**, DwC**:									
Dutchess	3A	Slight	Slight	Slight	Slight	Sugar maple	60	3	Eastern white pine, red pine.
						Northern red oak	62	3	
						Eastern white pine	66	8	
						White oak	60	3	
						Hickory	---	--	
						Eastern hemlock	---	--	
Cardigan	9A	Slight	Slight	Moderate	Moderate	Eastern white pine	73	9	Eastern white pine, red pine, European larch.
						Sugar maple	65	3	
						Northern red oak	65	3	
Rock outcrop***									
DwD**:									
Dutchess	3R	Moderate	Moderate	Slight	Slight	Sugar maple	60	3	Eastern white pine, red pine.
						Northern red oak	62	3	
						Eastern white pine	66	8	
						White oak	60	3	
						Hickory	---	--	
						Eastern hemlock	---	--	
Cardigan	9R	Moderate	Moderate	Moderate	Moderate	Eastern white pine	73	9	Eastern white pine, red pine, European larch.
						Sugar maple	65	3	
						Northern red oak	65	3	
Rock outcrop***									
DxB**, DxC**:									
Dutchess	3A	Slight	Slight	Slight	Slight	Sugar maple	60	3	Eastern white pine, red pine.
						Northern red oak	62	3	
						Eastern white pine	66	8	
						White oak	60	3	
						Hickory	---	--	
						Eastern hemlock	---	--	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
DxB**, DxC**:									
Cardigan	9A	Slight	Slight	Moderate	Moderate	Eastern white pine	73	9	Eastern white pine, red pine, European larch.
						Sugar maple	65	3	
						Northern red oak	65	3	
Urban land.									
Rock outcrop***									
FcB**, FcC**:									
Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Galway	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, European larch, Norway spruce, red pine.
						Northern red oak	70	4	
						White ash	75	3	
Rock outcrop****									
FcD**:									
Farmington	2D	Moderate	Moderate	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Galway	3R	Moderate	Moderate	Slight	Slight	Sugar maple	65	3	Eastern white pine, European larch, Norway spruce, red pine.
						Northern red oak	70	4	
						White ash	75	3	
Rock outcrop****									
FeE**:									
Farmington	2R	Severe	Severe	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Rock outcrop.									

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Fr: Fredon	3W	Slight	Severe	Severe	Severe	Northern red oak	60	3	Yellow-poplar, eastern white pine, white spruce, Norway spruce.
						Yellow-poplar	80	5	
						Eastern white pine	70	9	
						Red maple	70	3	
GfB**, GfC**:									
Galway	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, European larch, Norway spruce, red pine.
						Northern red oak	70	4	
						White ash	75	3	
Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Rock outcrop***									
GfD**:									
Galway	3R	Moderate	Moderate	Slight	Slight	Sugar maple	65	3	Eastern white pine, European larch, Norway spruce, red pine.
						Northern red oak	70	4	
						White ash	75	3	
Farmington	2D	Moderate	Moderate	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Rock outcrop***									
GlB**, GlC**:									
Galway	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, European larch, Norway spruce, red pine.
						Northern red oak	70	4	
						White ash	75	3	
Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Urban land.									
Rock outcrop***									

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
GsA, GsB, GsC---Georgia	3A	Slight	Slight	Slight	Slight	Sugar maple---------	60	3	Eastern white pine, larch, Norway spruce.
						Northern red oak----	70	4	
						Red maple-----------	70	3	
						White ash-----------	66	3	
						Eastern white pine--	75	10	
						Basswood------------	65	3	
						Yellow birch--------	60	3	
						Quaking aspen-------	---	--	
Ha--------------Halsey	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	Eastern white pine, white spruce.
						White oak-----------	---	--	
						Swamp white oak-----	---	--	
						American beech------	---	--	
						River birch---------	---	--	
HeA, HeB--------Haven	10A	Slight	Slight	Slight	Slight	Eastern white pine--	75	10	Eastern white pine, red pine, Norway spruce, European larch.
						Northern red oak----	55	3	
						Sugar maple---------	65	3	
						Red pine------------	75	8	
Hf**:									
Haven----------	10A	Slight	Slight	Slight	Slight	Eastern white pine--	75	10	Eastern white pine, red pine, Norway spruce, European larch.
						Northern red oak----	55	3	
						Sugar maple---------	65	3	
						Red pine------------	75	8	
Urban land.									
HoC**:									
Hollis---------	2D	Slight	Slight	Moderate	Severe	Northern red oak----	47	2	Eastern white pine.
						Eastern white pine--	55	6	
						Sugar maple---------	56	2	
Chatfield------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	
Rock outcrop.									
HoD**:									
Hollis---------	2D	Moderate	Moderate	Moderate	Severe	Northern red oak----	47	2	Eastern white pine.
						Eastern white pine--	55	6	
						Sugar maple---------	56	2	
Chatfield------	3R	Slight	Moderate	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	70	4	
						White ash-----------	75	3	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
HoD**:									
Rock outcrop.									
HoE**, HoF**:									
Hollis	2R	Severe	Severe	Moderate	Severe	Northern red oak	47	2	Eastern white pine.
						Eastern white pine	55	6	
						Sugar maple	56	2	
Chatfield	3R	Moderate	Severe	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak	70	4	
						White ash	75	3	
Rock outcrop.									
HsA, HsB, HsC Hoosic	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch.
						Northern red oak	75	4	
HsD Hoosic	3R	Slight	Moderate	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch.
						Northern red oak	75	4	
HsE Hoosic	3R	Moderate	Severe	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch.
						Northern red oak	75	4	
HtA, HtB Hoosic	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch.
						Northern red oak	75	4	
HuA**, HuB**:									
Hoosic	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch.
						Northern red oak	75	4	
Urban land.									
HvB**:									
Hudson	4A	Slight	Slight	Slight	Slight	Northern red oak	80	4	Eastern white pine, yellow-poplar, black cherry, black walnut.
						Sugar maple	70	3	
						Eastern white pine	85	10	
						White ash	85	4	
Vergennes	8C	Slight	Moderate	Severe	Slight	Eastern white pine	65	8	Eastern white pine, Norway spruce.
						Northern red oak	58	3	
						Sugar maple	60	3	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns: Erosion hazard	Management concerns: Equip- ment limita- tion	Management concerns: Seedling mortal- ity	Management concerns: Wind- throw hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc- tivity class*	Trees to plant
HvC**:									
Hudson---------	4R	Moderate	Slight	Slight	Slight	Northern red oak----	80	4	Eastern white pine, yellow- poplar, black cherry, black walnut.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	85	4	
Vergennes------	8C	Slight	Moderate	Severe	Slight	Eastern white pine--	65	8	Eastern white pine, Norway spruce.
						Northern red oak----	58	3	
						Sugar maple---------	60	3	
HvD**:									
Hudson---------	4R	Severe	Moderate	Slight	Slight	Northern red oak----	80	4	Eastern white pine, yellow- poplar, black cherry, black walnut.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	85	4	
Vergennes------	8R	Moderate	Severe	Severe	Slight	Eastern white pine--	65	8	Eastern white pine, Norway spruce.
						Northern red oak----	58	3	
						Sugar maple---------	60	3	
HvE**:									
Hudson---------	4R	Severe	Severe	Slight	Slight	Northern red oak----	80	4	Eastern white pine, yellow- poplar, black cherry, black walnut.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	85	4	
Vergennes------	8R	Severe	Severe	Severe	Slight	Eastern white pine--	65	8	Eastern white pine, Norway spruce.
						Northern red oak----	58	3	
						Sugar maple---------	60	3	
Kn**:									
Kingsbury------	3W	Slight	Moderate	Slight	Moderate	Sugar maple---------	60	3	Eastern white pine, Norway spruce, white spruce.
						Balsam fir----------	60	8	
						Eastern white pine--	75	10	
						White ash-----------	67	3	
Rhinebeck------	3W	Slight	Moderate	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, Norway spruce, European larch, white spruce.
						Northern red oak----	70	4	
						Eastern white pine--	75	10	
						Red maple-----------	70	3	
KrA, KrB, KrC--- Knickerbocker	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch.
						Northern red oak----	75	4	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
KrD------------- Knickerbocker	3A	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak----	65 75	3 4	Eastern white pine, red pine, European larch.
KuA**, KuB**:									
Knickerbocker--	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak----	65 75	3 4	Eastern white pine, red pine, European larch.
Urban land.									
Ln-------------- Linlithgo	2A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- Yellow-poplar-------	70 80 95	3 4 7	Eastern white pine, yellow-poplar, Norway spruce, black walnut.
Lv-------------- Livingston	2W	Slight	Severe	Severe	Severe	Red maple----------- American elm-------- Northern whitecedar-	40 --- ---	2 -- --	
McC**:									
Macomber-------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- White spruce-------- Balsam fir---------- Red spruce---------- American beech------ Paper birch--------- Eastern hemlock----- White oak----------- Northern red oak----	65 65 65 55 --- 60 --- 70 70	3 10 9 9 -- 4 -- 4 4	Eastern white pine, red pine, white spruce, balsam fir, Norway spruce.
Taconic--------	2D	Slight	Slight	Severe	Moderate	Sugar maple--------- White spruce-------- Balsam fir---------- Red spruce---------- American beech------ Paper birch--------- Eastern hemlock----- White oak----------- Northern red oak----	50 50 50 40 --- 53 --- 50 50	2 8 7 6 -- 4 -- 2 2	White spruce, balsam fir, eastern white pine, red pine, Norway spruce.
Rock Outcrop****									
MnA, MnB-------- Massena	10W	Slight	Moderate	Moderate	Moderate	Eastern white pine-- Northern red oak---- Red maple-----------	75 70 75	10 4 3	Eastern white pine, white spruce, northern whitecedar.

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
NwB**:									
Nassu----------	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, red pine, European larch.
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
Cardigan-------	9A	Slight	Slight	Moderate	Moderate	Eastern white pine--	73	9	Eastern white pine, red pine, European larch.
						Sugar maple---------	65	3	
						Northern red oak----	65	3	
Rock Outcrop****									
NwC**:									
Nassau---------	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, red pine, European larch.
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
Cardigan-------	9A	Slight	Slight	Moderate	Moderate	Eastern white pine--	73	9	Eastern white pine, red pine, European larch.
						Sugar maple---------	65	3	
						Northern red oak----	65	3	
Rock outcrop****									
NwD**:									
Nassau---------	2D	Slight	Moderate	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, red pine, European larch.
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
Cardigan-------	9R	Moderate	Moderate	Moderate	Moderate	Eastern white pine--	73	9	Eastern white pine, red pine, European larch.
						Sugar maple---------	65	3	
						Northern red oak----	65	3	
Rock outcrop****									
NxE**, NxF**:									
Nassau---------	2R	Moderate	Severe	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, red pine, European larch.
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
Rock outcrop.									

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Pc: Palms, maat<50	2W	Slight	Severe	Severe	Severe	Red maple	55	2	Northern whitecedar, tamarack.
						Silver maple	80	2	
						White ash	---	--	
						Quaking aspen	---	--	
						Northern whitecedar	---	--	
						Tamarack	61	4	
						Black ash	---	--	
Pg: Pawling	4A	Slight	Slight	Slight	Slight	Northern red oak	80	4	Yellow-poplar, eastern white pine, Norway spruce, European larch, black walnut, black cherry.
						Sugar maple	70	3	
						Yellow-poplar	95	7	
PwB, PwC: Pittstown	4A	Slight	Slight	Slight	Moderate	Northern red oak	72	4	Eastern white pine, balsam fir, white spruce, Scotch pine.
						Sugar maple	66	3	
						Eastern white pine	80	10	
						Red spruce	50	8	
PzA, PzB: Punsit	4W	Slight	Moderate	Moderate	Moderate	Northern red oak	75	4	Eastern white pine, white spruce, Norway spruce.
						Sugar maple	60	3	
						Black cherry	65	3	
Ra: Raynham	3W	Slight	Severe	Moderate	Severe	Red maple	65	3	Eastern white pine, white spruce.
						Eastern white pine	65	8	
						White spruce	55	9	
						Red spruce	45	7	
						Elm	---	--	
						Eastern hemlock	---	--	
						Gray birch	---	--	
						Sugar maple	---	--	
						Balsam fir	---	--	
						Tamarack	---	--	
Sc: Scio	4A	Slight	Slight	Slight	Slight	Northern red oak	75	4	European larch, eastern white pine, red pine, Norway spruce, white spruce.
						White ash	85	4	
						Sugar maple	70	3	
						Black cherry	80	4	
						Eastern hemlock	70	--	
						Eastern white pine	85	10	
SkB, SkC: Stockbridge	4A	Slight	Slight	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
SkD: Stockbridge	4R	Moderate	Moderate	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	
SkE: Stockbridge	4R	Severe	Severe	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	
SmB**, SmC**:									
Stockbridge	4A	Slight	Slight	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	
Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Rock outcrop***									
SmD**:									
Stockbridge	4R	Moderate	Moderate	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	
Farmington	2D	Moderate	Moderate	Severe	Moderate	Sugar maple	50	2	Eastern white pine, red pine, European larch.
						Northern red oak	50	2	
						Eastern white pine	55	6	
						American basswood	55	2	
						White ash	55	2	
						Eastern hemlock	50	--	
Rock outcrop***									
SrB**:									
Stockbridge	4A	Slight	Slight	Slight	Slight	Northern red oak	70	4	Eastern white pine, white spruce, Norway spruce, European larch.
						Sugar maple	60	3	
						Eastern white pine	75	10	
						American beech	---	--	
						Eastern hemlock	---	--	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns: Erosion hazard	Management concerns: Equip-ment limita-tion	Management concerns: Seedling mortal-ity	Management concerns: Wind-throw hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc-tivity class*	Trees to plant
Urban land.									
Su: Sun	3W	Slight	Severe	Severe	Severe	Red maple	65	3	Northern whitecedar.
TmD**:									
Taconic	2D	Slight	Moderate	Severe	Moderate	Sugar maple	50	2	White spruce, balsam fir, eastern white pine, red pine, Norway spruce.
						White spruce	50	8	
						Balsam fir	50	7	
						Red spruce	40	6	
						American beech	---	--	
						Paper birch	53	4	
						Eastern hemlock	---	--	
						White oak	50	2	
						Northern red oak	50	2	
Macomber	3R	Slight	Moderate	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, white spruce, balsam fir, Norway spruce.
						White spruce	65	10	
						Balsam fir	65	9	
						Red spruce	55	9	
						American beech	---	--	
						Paper birch	60	4	
						Eastern hemlock	---	--	
						White oak	70	4	
						Northern red oak	70	4	
Rock outcrop.									
TrE**, TrF**:									
Taconic	2R	Moderate	Severe	Severe	Moderate	Sugar maple	50	2	White spruce, balsam fir, eastern white pine, red pine, Norway spruce.
						White spruce	50	8	
						Balsam fir	50	7	
						Red spruce	40	6	
						American beech	---	--	
						Paper birch	53	4	
						Eastern hemlock	---	--	
						White oak	50	2	
						Northern red oak	50	2	
Rock outcrop.									
UnB: Unadilla	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, black cherry, Norway spruce, European larch, red pine, white spruce.
						Eastern white pine	85	10	
						Northern red oak	80	4	
						Black cherry	80	4	
						White ash	95	5	

See footnote at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
We-------------- Wappinger	4A	Slight	Slight	Slight	Slight	Northern red oak----	75	4	Eastern white pine, yellow-poplar, Norway spruce, black walnut, European larch.
						Yellow-poplar-------	85	6	
						Sugar maple---------	67	3	
Wy-------------- Wayland	3W	Slight	Severe	Severe	Severe	Red maple-----------	65	3	White spruce, northern whitecedar.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

*** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.

**** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 9.—Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BeB: Bernardston	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones, slope	Moderate: wetness.	Slight.
BeC: Bernardston	Moderate: slope, small stones, wetness.	Moderate: slope, wetness, small stones.	Severe: slope, small stones, wetness	Moderate: wetness.	Moderate: slope.
BeD: Bernardston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: wetness, slope.	Severe: slope.
BeE: Bernardston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
BgB*:					
Bernardston	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable.
Ca: Canandaigua	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cc: Carlisle	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
ChB: Charlton	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
ChC: Charlton	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
ChD: Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
ChE: Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ClC: Charlton	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight	Moderate: large stones, slope.
ClD: Charlton	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ClE------------------- Charlton	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
CrB*:					
Charlton-------------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
Chatfield------------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: droughty, thin layer.
Rock outcrop**-------					
CrC*:					
Charlton-------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
Chatfield------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: droughty, slope, thin layer.
Rock outcrop**-------					
CrD*:					
Charlton-------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Chatfield------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rock outcrop**-------					
CrE*:					
Charlton-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chatfield------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop**-------					
CtB*:					
Chatfield------------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: droughty, thin layer.
Hollis---------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: depth to rock.
Rock outcrop***------					

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CtC*:					
Chatfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, thin layer.
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: depth to rock.
Rock outcrop***					
CtD*:					
Chatfield	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Hollis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
Rock outcrop***					
CuA, CuB Copake	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
CuC Copake	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
CuD Copake	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
CuE Copake	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
CwA, CwB Copake	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
CxB*:					
Copake	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
Urban land	Variable	Variable	Variable	Variable	Variable.
DuB Dutchess	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
DuC Dutchess	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
DuD Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DwB*:					
Dutchess	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
Cardigan	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
Rock outcrop**					
DwC*:					
Dutchess	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Cardigan	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
Rock outcrop**					
DwD*:					
Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Cardigan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Rock outcrop**					
DxB*:					
Dutchess	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
Cardigan	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
Urban land	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**					
DxC*:					
Dutchess	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Cardigan	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
Urban land	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**					
FcB*:					
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: thin layer.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FcB*:					
Galway	Moderate: small stones, wetness.	Moderate: small stones, wetness.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, wetness.
Rock outcrop***					
FcC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
Galway	Moderate: slope, small stones, wetness.	Moderate: slope, small stones, wetness.	Severe: slope, small stones.	Moderate: wetness.	Moderate: small stones, wetness, slope.
Rock outcrop***					
FcD*:					
Farmington	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
Galway	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, wetness.	Severe: slope.
Rock outcrop***					
FeE*:					
Farmington	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, thin layer.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock.
Ff*:					
Fluvaquents	Severe: flooding, ponding.	Severe: ponding.	Severe: small stones, ponding, flooding.	Severe: ponding.	Severe: ponding, droughty, flooding.
Udifluvents	Severe: flooding.	Moderate: flooding, wetness, small stones.	Severe: small stones, flooding.	Moderate: wetness, flooding.	Severe: droughty, flooding.
Fr Fredon	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GfB*:					
Galway	Moderate: small stones, wetness.	Moderate: small stones, wetness.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, wetness.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: thin layer.
Rock outcrop**					
GfC*:					
Galway	Moderate: slope, small stones, wetness.	Moderate: slope, small stones, wetness.	Severe: slope, small stones.	Moderate: wetness.	Moderate: small stones, wetness, slope.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
Rock outcrop**					
GfD*:					
Galway	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, wetness.	Severe: slope.
Farmington	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
Rock outcrop**					
GlB*:					
Galway	Moderate: small stones, wetness.	Moderate: small stones, wetness.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, wetness.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: thin layer.
Urban land	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**					
GlC*:					
Galway	Moderate: slope, small stones, wetness.	Moderate: slope, small stones, wetness.	Severe: slope, small stones.	Moderate: wetness.	Moderate: small stones, wetness, slope.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
Urban land	Variable	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GlC*:					
Rock outcrop**					
GsA Georgia	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Severe: erodes easily.	Moderate: large stones.
GsB Georgia	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: large stones.
GsC Georgia	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope.
Ha Halsey	Severe: flooding, wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
HeA Haven	Slight	Slight	Moderate: small stones.	Slight	Slight.
HeB Haven	Slight	Slight	Moderate: slope, small stones.	Moderate: erodes easily.	Slight.
Hf*:					
Haven	Slight	Slight	Moderate: small stones.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable.
HoC*:					
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: depth to rock.
Chatfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, thin layer.
Rock outcrop**					
HoD*:					
Hollis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
Chatfield	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rock outcrop**					
HoE*, HoF*:					
Hollis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HoE*, HoF*:					
Chatfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop***					
HsA, HsB Hoosic	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: droughty, small stones.
HsC Hoosic	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: droughty, small stones.
HsD Hoosic	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
HsE Hoosic	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
HtA, HtB Hoosic	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Moderate: droughty, small stones
HuA*, HuB*:					
Hoosic	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: droughty, small stones.
Urban land	Variable	Variable	Variable	Variable	Variable.
HvB*:					
Hudson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
Vergennes	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
HvC*:					
Hudson	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Vergennes	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness, slope.
HvD*:					
Hudson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HvD*:					
Vergennes	Severe: slope, wetness, percs slowly.	Severe: slope, percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Severe: slope.
HvE*:					
Hudson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Vergennes	Severe: slope, wetness, percs slowly.	Severe: slope, percs slowly.	Severe: slope, wetness.	Severe: slope, erodes easily.	Severe: slope.
Hy*:					
Hydraquents	Severe: wetness, flooding	Severe: wetness	Severe: wetness, flooding	Severe: wetness	Severe: wetness, flooding
Medisaprists	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
Kn*:					
Kingsbury	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Rhinebeck	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
KrA Knickerbocker	Slight	Slight	Moderate: small stones.	Slight	Moderate: droughty.
KrB Knickerbocker	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
KrC Knickerbocker	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
KrD Knickerbocker	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
KuA*:					
Knickerbocker	Slight	Slight	Moderate: small stones.	Slight	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable.
KuB*:					
Knickerbocker	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
KuB*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Ln Linlithgo	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Lv Livingston	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
McC*:					
Macomber	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty, slope.
Taconic	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
Rock outcrop***					
MnA, MnB Massena	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NwB*:					
Nassu	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: thin layer.
Cardigan	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
Rock outcrop***					
NwC*:					
Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones.	Slight	Severe: thin layer.
Cardigan	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
Rock outcrop***					
NwD*:					
Nassau	Severe: slope, depth to rock	Severe: slope, depth to rock.	Severe: slope, small stones.	Moderate: slope.	Severe: slope, thin layer.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
NwD*:					
Cardigan-------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Rock outcrop***------					
NxE*, NxF*:					
Nassau---------------	Severe: slope, depth to rock	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe----------	Severe: slope, thin layer.
Rock outcrop---------					
Pc-------------------- Palms, maat<50	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Pg-------------------- Pawling	Severe: flooding.	Moderate: flooding.	Moderate: flooding.	Slight----------	Moderate: flooding.
Ps*------------------- Pits, gravel	Severe: small stones, too sandy.	Severe: too sandy, small stones.	Severe: small stones, too sandy.	Severe: too sandy, small stones.	Severe: small stones, droughty.
Pu*------------------- Pits, quarry	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: depth to rock.
PwB------------------- Pittstown	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, small stones.	Moderate: wetness.	Slight.
PwC------------------- Pittstown	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope.
PzA, PzB-------------- Punsit	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ra-------------------- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Sc-------------------- Scio	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: erodes easily.	Moderate: wetness.
SkB------------------- Stockbridge	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight----------	Slight.
SkC------------------- Stockbridge	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SkD: Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
SkE: Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SmB*:					
Stockbridge	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: thin layer.
Rock outcrop**					
SmC*:					
Stockbridge	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
Rock outcrop**					
SmD*:					
Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Farmington	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
Rock outcrop**					
SrB*:					
Stockbridge	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable.
Su: Sun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TmD*:					
Taconic	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
Macomber	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.

* See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TmD*:					
Rock outcrop**					
TrE*, TrF*:					
Taconic	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop**					
Ud* Udorthents	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.	Severe: droughty.
Ue* Udorthents	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
UnB Unadilla	Slight	Slight	Moderate: slope.	Moderate: erodes easily.	Slight.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable.
We Wappinger	Severe: flooding.	Slight	Moderate: flooding, small stones.	Severe: erodes easily.	Moderate: flooding.
Wy Wayland	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 10.—Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BeB: Bernardston	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BeC: Bernardston	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BeD: Bernardston	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BeE: Bernardston	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
BgB*:										
Bernardston	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Ca: Canandaigua	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
Cc: Carlisle	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ChB: Charlton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ChC: Charlton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ChD: Charlton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
ChE, ClC, ClD, ClE: Charlton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
CrB*:										
Charlton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Chatfield	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Rock outcrop**										
CrC*:										
Charlton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Chatfield	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
CrC*:										
Rock outcrop**										
CrD*:										
Charlton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Chatfield	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop**										
CrE*:										
Charlton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Chatfield	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop**										
CtB*:										
Chatfield	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop***										
CtC*:										
Chatfield	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop***										
CtD*:										
Chatfield	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop***										
CuA, CuB: Copake	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CuC: Copake	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
CuD---------------- Copake	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CuE---------------- Copake	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
CwA, CwB----------- Copake	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CxB*:										
Copake------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land--------	---	---	---	---	---	---	---	---	---	---
DuB---------------- Dutchess	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DuC---------------- Dutchess	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DuD---------------- Dutchess	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DwB*:										
Dutchess----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cardigan----------	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Rock outcrop**----										
DwC*:										
Dutchess----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cardigan----------	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Rock outcrop**----										
DwD*:										
Dutchess----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Cardigan----------	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop**----										

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
DxB*:										
Dutchess	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cardigan	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Rock outcrop**										
DxC**:										
Dutchess	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cardigan	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Rock outcrop**										
FcB*:										
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Galway	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Rock outcrop***										
FcC*:										
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Galway	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Rock outcrop***										
FcD*:										
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Galway	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rock outcrop***										
FeE*:										
Farmington	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop										

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ff*:										
Fluvaquents	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
Udifluvents	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Fr: Fredon	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GfB*:										
Galway	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**										
GfC*:										
Galway	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**										
GfD*:										
Galway	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**										
GlB*:										
Galway	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Rock outcrop**										
GlC*:										
Galway	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
GlC*:										
Urban land	---	---	---	---	---	---	---	---	---	---
Rock outcrop**										
GsA Georgia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GsB Georgia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GsC Georgia	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ha Halsey	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HeA Haven	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeB Haven	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Hf*:										
Haven	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
HoC*:										
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Chatfield	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop										
HoD*:										
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Chatfield	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop										
HoE*, HoF*:										
Hollis	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Chatfield	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop										

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
HsA, HsB, HsC, HsD-- Hoosic	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
HsE-- Hoosic	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HtA, HtB-- Hoosic	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
HuA*, HuB*:										
Hoosic--	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land--	---	---	---	---	---	---	---	---	---	---
HvB*:										
Hudson--	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Vergennes--	Fair	Fair	Poor	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
HvC*:										
Hudson--	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Vergennes--	Fair	Fair	Poor	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
HvD*:										
Hudson--	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Vergennes--	Poor	Fair	Poor	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
HvE*:										
Hudson--	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Vergennes--	Very poor.	Poor	Poor	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Hy*:										
Hydraquents--	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Medisaprists--	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Kn*:										
Kingsbury--	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
Rhinebeck--	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
KrA, KrB, KrC-- Knickerbocker	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
KrD----------------- Knickerbocker	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
KuA*, KuB*:										
Knickerbocker-----	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land--------	---	---	---	---	---	---	---	---	---	---
Ln----------------- Linlithgo	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Lv----------------- Livingston	Very poor.	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Poor	Poor.
McC*:										
Macomber----------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Taconic-----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Rock outcrop***---										
MnA---------------- Massena	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MnB---------------- Massena	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NwB*:										
Nassu-------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Cardigan----------	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Rock outcrop***---										
NwC*:										
Nassau------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Cardigan----------	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
Rock outcrop***---										
NwD*:										
Nassau------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
NwD*:										
Cardigan	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop***										
NxE*, NxF*:										
Nassau	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop										
Pc Palms, maat<50	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pg Pawling	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Ps* Pits, gravel	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Pu* Pits, quarry	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
PwB Pittstown	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
PwC Pittstown	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
PzA Punsit	Fair	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
PzB Punsit	Fair	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
Ra Raynham	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
Sc Scio	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SkB Stockbridge	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SkC Stockbridge	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SkD Stockbridge	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SkE Stockbridge	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
SmB*:										
Stockbridge-------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Farmington--------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**----										
SmC*:										
Stockbridge-------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Farmington--------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**----										
SmD*:										
Stockbridge-------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Farmington--------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop**----										
SrB*:										
Stockbridge-------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land--------	---	---	---	---	---	---	---	---	---	---
Su----------------- Sun	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
TmD*:										
Taconic-----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Macomber----------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop------										
TrE*, TrF*:										
Taconic-----------	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rock outcrop------										
Ud*---------------- Udorthents	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Ue*: Udorthents	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.
UnB: Unadilla	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ur*: Urban land	---	---	---	---	---	---	---	---	---	---
W*. Water, < 40 acres										
We: Wappinger	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Wy: Wayland	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WZ*. Water, census 740 acres										

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 11.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BeB: Bernardston	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
BeC: Bernardston	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
BeD, BeE: Bernardston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BgB*:						
Bernardston	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ca: Canandaigua	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Cc: Carlisle	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
ChB: Charlton	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
ChC: Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
ChD, ChE: Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ClC: Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
ClD, ClE: Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CrB*:						
Charlton	Slight	Slight	Slight	Slight	Slight	Slight.
Chatfield	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock, frost action.	Moderate: droughty, thin layer.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CrB*:						
Rock outcrop**						
CrC*:						
Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Chatfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: droughty, slope, thin layer.
Rock outcrop**						
CrD*, CrE*:						
Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chatfield	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop**						
CtB*:						
Chatfield	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock, frost action.	Moderate: droughty, thin layer.
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop**						
CtC*:						
Chatfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: droughty, slope, thin layer.
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop**						
CtD*:						
Chatfield	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hollis	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CtD*:						
Rock outcrop***--						
CuA--------------- Copake	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: small stones.
CuB--------------- Copake	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: small stones.
CuC--------------- Copake	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, slope.
CuD, CuE---------- Copake	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CwA, CwB---------- Copake	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Moderate: small. stones
CxB*:						
Copake-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: small stones.
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
DuB--------------- Dutchess	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: large stones.
DuC--------------- Dutchess	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
DuD--------------- Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DwB*:						
Dutchess---------	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones.
Cardigan---------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones.
Rock outcrop**---						

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DwC*:						
Dutchess	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Cardigan	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, slope.
Rock outcrop**						
DwD*:						
Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Cardigan	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop**						
DxB*:						
Dutchess	Slight	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones.
Cardigan	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
DxC*:						
Dutchess	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Cardigan	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, slope.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
FcB*:						
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FcB*:						
Galway	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: small stones, wetness.
Rock outcrop***						
FcC*:						
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Galway	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: slope.	Moderate: depth to rock, slope, wetness.	Moderate: small stones, wetness, slope.
Rock outcrop***						
FcD*:						
Farmington	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Galway	Severe: depth to rock, slope, wetness.	Severe: slope.	Severe: depth to rock, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop***	Severe:	Severe:	Severe:	Severe:	Severe:	Severe:
FeE*:						
Farmington	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop						
Ff*:						
Fluvaquents	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding, droughty, flooding.
Udifluvents	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: droughty, flooding.
Fr: Fredon	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GfB*:						
Galway-----------	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: small stones, wetness.
Farmington-------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop**---						
GfC*:						
Galway-----------	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: slope.	Moderate: depth to rock, slope, wetness.	Moderate: small stones, wetness, slope.
Farmington-------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop**---						
GfD*:						
Galway-----------	Severe: depth to rock, slope, wetness.	Severe: slope.	Severe: depth to rock, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.
Farmington-------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop**---						
GlB*:						
Galway-----------	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: small stones, wetness.
Farmington-------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Rock outcrop**---						
GlC*:						
Galway-----------	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: slope.	Moderate: depth to rock, slope, wetness.	Moderate: small stones, wetness, slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GlC*:						
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
GsA Georgia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: large stones.
GsB Georgia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: large stones.
GsC Georgia	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: large stones, slope.
Ha Halsey	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, frost action.	Severe: wetness.
HeA Haven	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
HeB Haven	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Hf*:						
Haven	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
HoC*:						
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Chatfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: droughty, slope, thin layer.
Rock outcrop						
HoD*, HoE*, HoF*:						
Hollis	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HoD*, HoE*, HoF*:						
Chatfield	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop						
HsA: Hoosic	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty, small stones.
HsB: Hoosic	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, small stones.
HsC: Hoosic	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, small stones.
HsD, HsE: Hoosic	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HtA: Hoosic	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty, small stones.
HtB: Hoosic	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, small stones.
HuA*:						
Hoosic	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty, small stones.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
HuB*:						
Hoosic	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, small stones.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HvB*:						
Hudson	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
Vergennes	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
HvC*:						
Hudson	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
Vergennes	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength.	Moderate: wetness, slope.
HvD*, HvE*:						
Hudson	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Vergennes	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: low strength, slope.	Severe: slope.
Hy*:						
Hydraquents	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Medisaprists	Severe: excess humus, wetness.	Severe: subsides, wetness, low strength.	Severe: subsides, wetness, low strength.	Severe: subsides, wetness, low strength.	Severe: subsides, wetness, frost action.	Severe: wetness, excess humus.
Kn*:						
Kingsbury	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness.
Rhinebeck	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
KrA Knickerbocker	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
KrB: Knickerbocker	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
KuB*:						
Knickerbocker	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ln: Linlithgo	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
Lv: Livingston	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
McC*:						
Macomber	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, droughty, slope.
Taconic	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop***						
MnA, MnB: Massena	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
NwB*:						
Nassu	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Cardigan	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones.
Rock outcrop***						
NwC*:						
Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Cardigan	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
NwC*:						
Rock outcrop***						
NwD*:						
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer.
Cardigan	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop***						
NxE*, NxF*:						
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer.
Rock outcrop						
Pc Palms, maat<50	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
Pg Pawling	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: frost action, flooding.	Moderate: flooding.
Ps* Pits, gravel	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: small stones, droughty.
Pu* Pits, quarry	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
PwB Pittstown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness, frost action.	Slight.
PwC Pittstown	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
PzA, PzB Punsit	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Ra Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Sc: Scio	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
SkB: Stockbridge	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
SkC: Stockbridge	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
SkD, SkE: Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SmB*:						
Stockbridge	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop**						
SmC*:						
Stockbridge	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop**						
SmD*:						
Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Farmington	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop**						
SrB*:						
Stockbridge	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Su: Sun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TmD*:						
Taconic	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Macomber	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop						
TrE*, TrF*:						
Taconic	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop						
Ud* Udorthents	Moderate: dense layer, wetness.	Slight	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Severe: droughty.
Ue* Udorthents	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Severe: droughty.
UnB Unadilla	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Severe: frost action.	Slight.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
We Wappinger	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Wy Wayland	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 12.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BeB: Bernardston	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
BeC: Bernardston	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
BeD, BeE: Bernardston	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
BgB*:					
Bernardston	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
Urban land	Variable	Variable	Variable	Variable	Variable.
Ca: Canandaigua	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cc: Carlisle	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
ChB: Charlton	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
ChC: Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope.
ChD, ChE: Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
ClC: Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope.
ClD, ClE: Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
CrB*:					
Charlton	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CrB*:					
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop**					
CrC*:					
Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope.
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop**					
CrD*, CrE*:					
Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Chatfield	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, slope.
Rock outcrop**					
CtB*:					
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Hollis	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, thin layer.
Rock outcrop***					
CtC*:					
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Hollis	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, thin layer.
Rock outcrop***					

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CtD*:					
Chatfield	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, slope.
Hollis	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope, thin layer.
Rock outcrop***					
CuA, CuB Copake	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CuC Copake	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CuD, CuE Copake	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
CwA, CwB Copake	Severe: wetness, poor filter.	Severe: flooding, seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
CxB*:					
Copake	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Urban land	Variable	Variable	Variable	Variable	Variable.
DuB Dutchess	Moderate: percs slowly.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight	Poor: small stones.
DuC Dutchess	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope.	Poor: small stones.
DuD Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DwB*:					
Dutchess	Moderate: percs slowly.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight	Poor: small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
DwC*:					
Dutchess	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope.	Poor: small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
DwD*:					
Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Cardigan	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop**					
DxB*:					
Dutchess	Moderate: percs slowly.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight	Poor: small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Urban land	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**					
DxC*:					
Dutchess	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope.	Poor: small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Urban land	Variable	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DxC*:					
Rock outcrop**					
FcB*:					
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Rock outcrop***					
FcC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Rock outcrop***					
FcD*:					
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Galway	Severe: depth to rock, wetness, slope.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop***					
FeE*:					
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop**					
Ff*:					
Fluvaquents	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, ponding.	Severe: flooding, depth to rock, seepage.	Severe: flooding, seepage, ponding.	Poor: too sandy, small stones, ponding.
Udifluvents	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, depth to rock, seepage.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fr: Fredon	Severe: wetness, poor filter.	Severe: seepage, flooding.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
GfB*:					
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
GfC*:					
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
GfD*:					
Galway	Severe: depth to rock, wetness, slope.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop**					
GlB*:**					
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Urban land	Variable	Variable	Variable	Variable	Variable.
GlC*:					
Galway	Severe: depth to rock, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GlC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Urban land	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**					
GsA Georgia	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Moderate: wetness.	Fair: small stones.
GsB Georgia	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
GsC Georgia	Severe: percs slowly, wetness.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones.
Ha Halsey	Severe: wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: seepage, wetness.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
HeA, HeB Haven	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones, too sandy.
Hf*:					
Haven	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones, too sandy.
Urban land	Variable	Variable	Variable	Variable	Variable.
HoC*:					
Hollis	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, thin layer.
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop**					
HoD*, HoE*, HoF*:					
Hollis	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope, thin layer.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HoD*, HoE*, HoF*:					
Chatfield----------	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, slope.
Rock outcrop**-----					
HsA, HsB------------ Hoosic	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HsC----------------- Hoosic	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HsD, HsE------------ Hoosic	Severe: poor filter, slope.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: small stones, seepage, too sandy.
HtA, HtB------------ Hoosic	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HuA*, HuB*:					
Hoosic-------------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
Urban land---------	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
HvB*:					
Hudson-------------	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
Vergennes----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
HvC*:					
Hudson-------------	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
Vergennes----------	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HvD*, HvE*:					
Hudson	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Vergennes	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope, too clayey.	Severe: wetness, slope.	Poor: too clayey, hard to pack, slope.
Hy*:					
Hydraquents	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: depth to rock, seepage, wetness.	Severe: seepage, wetness.	Poor: too clayey, small stones, wetness.
Medisaprists	Severe: subsides, wetness, percs slowly.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, excess humus.	Severe: seepage, wetness.	Poor: wetness, excess humus.
Kn*:					
Kingsbury	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Rhinebeck	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
KrA, KrB Knickerbocker	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Severe: seepage, too sandy.
KrC Knickerbocker	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Severe: seepage, too sandy.
KrD Knickerbocker	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: slope, seepage, too sandy.
KuA*, KuB*:					
Knickerbocker	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Severe: seepage, too sandy.
Urban land	Variable	Variable	Variable	Variable	Variable.
Ln Linlithgo	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Lv: Livingston	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
McC*:					
Macomber	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Taconic	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
Rock outcrop***					
MnA, MnB: Massena	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
NwB*:					
Nassu	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop***					
NwC*:					
Nassau	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Cardigan	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop***					
NwD*:					
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, area reclaim, small stones.
Cardigan	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop***					

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
NxE*, NxF*:					
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, area reclaim, small stones.
Rock outcrop***					
Pc Palms, maat<50	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
Pg Pawling	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Good.
Ps* Pits, gravel	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Slight	Poor: seepage, too sandy, small stones.
Pu* Pits, quarry	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
PwB Pittstown	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
PwC Pittstown	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: slope, small stones.
PzA Punsit	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
PzB Punsit	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
Ra Raynham	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Sc Scio	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Fair: wetness, thin layer.
SkB Stockbridge	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: small stones.
SkC Stockbridge	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SkD, SkE: Stockbridge	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
SmB*:					
Stockbridge	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: small stones.
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
SmC*:					
Stockbridge	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop**					
SmD*:					
Stockbridge	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop**					
SrB*:					
Stockbridge	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: small stones.
Urban land	Variable	Variable	Variable	Variable	Variable.
Su: Sun	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
TmD*:					
Taconic	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Macomber	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop					

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TrE*, TrF*:					
Taconic	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop					
Ud* Udorthents	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: small stones.
Ue* Udorthents	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: small stones, wetness.
UnB Unadilla	Slight	Severe: seepage.	Severe: seepage.	Slight	Fair: thin layer.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable.
We Wappinger	Severe: flooding, wetness, poor filter.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
Wy Wayland	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 13.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BeB, BeC: Bernardston	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BeD: Bernardston	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BeE: Bernardston	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BgB*:				
Bernardston	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Urban land	Variable	Variable	Variable	Variable.
Ca: Canandaigua	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cc: Carlisle	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
ChB: Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
ChC: Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
ChD: Charlton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ChE: Charlton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ClC: Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
ClD: Charlton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ClE: Charlton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
CrB*:				
Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CrB*:				
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop**				
CrC*:				
Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop**				
CrD*:				
Charlton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop**				
CrE*:				
Charlton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Chatfield	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop**				
CtB*, CtC*:				
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Hollis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Rock outcrop***				
CtD*:				
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Hollis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop***				

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CuA, CuB, CuC: Copake	Good	Probable	Probable	Poor: small stones, area reclaim.
CuD: Copake	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
CuE: Copake	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
CwA, CwB: Copake	Good	Probable	Probable	Severe: cutbanks cave.
CxB*:				
Copake	Good	Probable	Probable	Poor: small stones, area reclaim.
Urban land	Variable	Variable	Variable	Variable.
DuB, DuC: Dutchess	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
DuD: Dutchess	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DwB*, DwC*:				
Dutchess	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop**				
DwD*:				
Dutchess	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop**				

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
DxB*, DxC*:				
Dutchess	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Urban land	Variable	Variable	Variable	Variable.
Rock outcrop**				
FcB*, FcC*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Galway	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop***				
FcD*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Galway	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop***				
FeE*:				
Farmington	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop**				
Ff*:				
Fluvaquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, area reclaim.
Udifluvents	Fair: depth to rock, wetness.	Probable	Probable	Poor: too sandy, small stones, area reclaim.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Fr-------------------- Fredon	Poor: wetness.	Probable-------------	Probable-------------	Poor: small stones, area reclaim, wetness.
GfB*, GfC*:				
Galway---------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Farmington-----------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop**-------				
GfD*:				
Galway---------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Farmington-----------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop**-------				
GlB*, GlC*:				
Galway---------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Farmington-----------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Urban land-----------	Variable-------------	Variable-------------	Variable-------------	Variable.
Rock outcrop**-------				
GsA, GsB, GsC--------- Georgia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Ha-------------------- Halsey	Poor: wetness.	Probable-------------	Probable-------------	Poor: small stones, area reclaim, wetness.
HeA, HeB-------------- Haven	Good-----------------	Probable-------------	Probable-------------	Poor: too sandy, area reclaim.
Hf*:				
Haven----------------	Good-----------------	Probable-------------	Probable-------------	Poor: too sandy, area reclaim.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Hf*:				
Urban land	Variable	Variable	Variable	Variable.
HoC*:				
Hollis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop				
HoD*:				
Hollis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop				
HoE*, HoF*:				
Hollis	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Chatfield	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop				
HsA, HsB, HsC Hoosic	Good	Probable	Probable	Poor: small stones, area reclaim.
HsD Hoosic	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
HsE Hoosic	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
HtA, HtB Hoosic	Good	Probable	Probable	Poor: small stones, area reclaim.
HuA*, HuB*:				
Hoosic	Good	Probable	Probable	Poor: small stones, area reclaim.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HuA*, HuB*:				
Urban land	Variable	Variable	Variable	Variable.
HvB*:				
Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey.
Vergennes	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
HvC*:				
Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey.
Vergennes	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
HvD*:				
Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, too clayey.
Vergennes	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HvE*:				
Hudson	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, too clayey.
Vergennes	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hy*:				
Hydraquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Medisaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Kn*:				
Kingsbury	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Kn*:				
Rhinebeck	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
KrA, KrB Knickerbocker	Good	Probable	Improbable: too sandy.	Fair: thin layer.
KrC Knickerbocker	Good	Probable	Improbable: too sandy.	Fair: slope, thin layer.
KrD Knickerbocker	Fair: slope.	Probable	Improbable: too sandy.	Poor: slope.
KuA*, KuB*:				
Knickerbocker	Good	Probable	Improbable: too sandy.	Fair: thin layer.
Urban land	Variable	Variable	Variable	Variable.
Ln Linlithgo	Poor: wetness.	Probable	Probable	Poor: area reclaim, wetness.
Lv Livingston	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
McC*:				
Macomber	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Taconic	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop***				
MnA, MnB Massena	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
NwB*:				
Nassu	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop***				

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NwC*:				
Nassau	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop***				
NwD*:				
Nassau	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, area reclaim, small stones.
Cardigan	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop***				
NxE*, NxF*:				
Nassau	Poor: slope, thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, area reclaim, small stones.
Rock outcrop***				
Pc Palms, maat<50	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Pg Pawling	Poor: frost action.	Probable	Probable	Good.
Ps* Pits, gravel	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Pu* Pits, quarry	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
PwB, PwC Pittstown	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
PzA, PzB Punsit	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Ra Raynham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Sc: Scio	Fair: wetness.	Probable	Probable	Poor: area reclaim.
SkB: Stockbridge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
SkC: Stockbridge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
SkD: Stockbridge	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SkE: Stockbridge	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SmB*:				
Stockbridge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop**				
SmC*:				
Stockbridge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop**				
SmD*:				
Stockbridge	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop**				
SrB*:				
Stockbridge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Urban land	Variable	Variable	Variable	Variable.
Su: Sun	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TmD*:				
Taconic	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Macomber	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
TrE*, TrF*:				
Taconic	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop				
Ud* Udorthents	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Ue* Udorthents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
UnB Unadilla	Good	Probable	Probable	Moderate: area reclaim.
Ur* Urban land	Variable	Variable	Variable	Variable.
We Wappinger	Good	Probable	Probable	Poor: area reclaim.
Wy Wayland	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 14.—Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BeB: Bernardston	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly	Rooting depth, percs slowly.
BeC, BeD, BeE: Bernardston	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly, rooting depth.
BgB*:						
Bernardston	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly	Rooting depth, percs slowly.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ca: Canandaigua	Slight	Severe: piping, wetness.	Severe: slow refill.	Frost action	Erodes easily, wetness.	Wetness, erodes easily.
Cc: Carlisle	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
ChB: Charlton	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Favorable	Favorable.
ChC, ChD, ChE, ClC, ClD, ClE: Charlton	Severe: slope, seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope.
CrB*:						
Charlton	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Favorable	Favorable.
Chatfield	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop**						

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
CrC*, CrD*, CrE*:						
Charlton	Severe: slope, seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope.
Chatfield	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop**						
CtB*:						
Chatfield	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Hollis	Severe: depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop***						
CtC*, CtD*:						
Chatfield	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Hollis	Severe: depth to rock, slope.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop***						
CuA, CuB Copake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
CuC, CuD, CuE Copake	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
CwA, CwB Copake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
CxB*:						
Copake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
DuB---------------Dutchess	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, erodes easily	Large stones, erodes easily.
DuC, DuD----------Dutchess	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
DwB*:						
Dutchess---------	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, erodes easily.	Large stones, erodes easily.
Cardigan---------	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
Rock outcrop**---						
DwC*, DwD*:						
Dutchess---------	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Cardigan---------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop**---						
DxB*:						
Dutchess---------	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, erodes easily.	Large stones, erodes easily.
Cardigan---------	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Rock outcrop**---						

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
DxC*:						
Dutchess	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Cardigan	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
FcB*:						
Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Galway	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock, wetness.	Depth to rock, droughty.
Rock outcrop***						
FcC*, FcD*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Galway	Severe: slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock, wetness.	Slope, depth to rock, droughty.
Rock outcrop***						
FeE*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop						
Ff*:						
Fluvaquents	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly, flooding.	Ponding, too sandy, percs slowly.	Wetness, droughty, percs slowly.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Ff*:						
Udifluvents	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding.	Wetness, too sandy, percs slowly.	Droughty, percs slowly.
Fr Fredon	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action	Wetness, too sandy.	Wetness.
GfB*:						
Galway	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock, wetness.	Depth to rock, droughty.
Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop**						
GfC*, GfD*:						
Galway	Severe: slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock, wetness.	Slope, depth to droughty. rock,
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop**						
GlB*:						
Galway	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock, wetness.	Depth to rock, droughty.
Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
GlC*:						
Galway	Severe: slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock, wetness.	Slope, depth to droughty. rock,

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
GlC*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Rock outcrop**						
GsA Georgia	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly, frost action.	Large stones, erodes easily.	Large stones, erodes easily.
GsB Georgia	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Large stones, erodes easily.	Large stones, erodes easily.
GsC Georgia	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Ha Halsey	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Wetness.
HeA, HeB Haven	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy.	Erodes easily.
Hf*:						
Haven	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy.	Erodes easily.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
HoC*, HoD*, HoE*, HoF*:						
Hollis	Severe: depth to rock, slope.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Chatfield	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop						
HsA, HsB Hoosic	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Droughty.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting- Drainage	Terraces and diversions	Grassed waterways
HsC, HsD, HsE----- Hoosic	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
HtA, HtB---------- Hoosic	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Droughty.
HuA*, HuB*:						
Hoosic-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Droughty.
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
HvB*:						
Hudson-----------	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
Vergennes--------	Moderate: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Erodes easily, wetness.	Wetness, erodes easily.
HvC*, HvD*, HvE*:						
Hudson-----------	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Vergennes--------	Severe: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
Hy*:						
Hydraquents------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, frost action, cutbanks cave.		
Medisaprists-----	Severe: seepage.	Severe: excess humus, wetness.	Severe: slow refill.	Subsides, frost action.	Wetness, soil blowing.	Wetness.
Kn*:						
Kingsbury--------	Slight---------	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes percs slowly.
Rhinebeck--------	Slight---------	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
KrA, KrB: Knickerbocker	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy	Droughty.
KrC, KrD: Knickerbocker	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
KuA*, KuB*:						
Knickerbocker	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy	Droughty.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ln: Linlithgo	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Erodes easily, wetness, too sandy.	Wetness, erodes easily.
Lv: Livingston	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, droughty.
McC*:						
Macomber	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Taconic	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop***						
MnA: Massena	Slight	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness.
MnB: Massena	Moderate: slope.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness.
NwB*:						
Nassu	Severe: depth to rock.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty, depth to rock.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
NwB*:						
Cardigan	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
Rock outcrop***						
NwC*, NwD*:						
Nassau	Severe: depth to rock, slope.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, droughty.
Cardigan	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
NxE*, NxF*:						
Nassau	Severe: depth to rock, slope.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, droughty.
Rock outcrop						
Pc Palms, maat<50	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Erodes easily, ponding, soil blowing.	Wetness, erodes easily, rooting depth.
Pg Pawling	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Flooding, wetness, poor outlets.	Not needed	Not needed.
Ps* Pits, gravel	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
Pu* Pits, quarry	Severe: depth to rock.	Slight	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
PwB Pittstown	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Percs slowly, wetness.	Percs slowly, wetness, rooting depth.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
PwC---------------Pittstown	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, percs slowly, wetness.	Slope, percs slowly, rooting depth.
PzA---------------Punsit	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness, droughty.
PzB---------------Punsit	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness, droughty.
Ra----------------Raynham	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
Sc----------------Scio	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action---	Erodes easily, wetness.	Erodes easily.
SkB---------------Stockbridge	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.
SkC, SkD, SkE-----Stockbridge	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
SmB*:						
Stockbridge------	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.
Farmington-------	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop**---						
SmC*, SmD*:						
Stockbridge------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
SmC*, SmD*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop**						
SrB*:						
Stockbridge	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Su Sun	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness, rooting depth, percs slowly.
TmD*:						
Taconic	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Macomber	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop						
TrE*, TrF*:						
Taconic	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop						
Ud* Udorthents	Severe: seepage.	Severe: seepage, piping.	Severe: slow refill.	Deep to water	Erodes easily, percs slowly.	Erodes easily, droughty.
Ue* Udorthents	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, cutbanks cave.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
UnB Unadilla	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Ur*: Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
We: Wappinger	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Not needed	Not needed.
Wy: Wayland	Slight	Severe: piping, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the unit
*** This unit contains rock outcrop that covers 2 to 10 percent of the unit.

Table 15.—Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
BeB, BeC, BeD, BeE---------- Bernardston	0-8	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	0-5	0-5	80-100	70-95	65-95	50-85	24-45	4-14
	8-27	Channery silt loam, silt loam, loam.	ML, CL-ML, SM, SC-SM	A-2, A-4	0-10	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	27-80	Channery silt loam, silt, loam, loam, channery loam	ML, CL-ML, SM, SC-SM	A-2, A-4	0-10	0-10	65-90	50-85	45-85	30-75	20-32	2-8
BgB*:												
Bernardston--	0-8	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	0-5	0-5	80-100	70-95	65-95	50-85	24-45	4-14
	8-27	Channery silt loam, silt loam, loam.	ML, CL-ML, SM, SC-SM	A-2, A-4	0-10	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	27-80	Channery silt loam, silt loam, loam, channery loam	ML, CL-ML, SM, SC-SM	A-2, A-4	0-10	0-10	65-90	50-85	45-85	30-75	20-32	2-8
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
Ca------------ Canandaigua	0-6	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	20-40	5-15
	6-40	Silt loam, very fine sandy loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	20-40	5-15
	40-72	Silt loam, very fine sandy loam, silty clay, silty clay loam.	ML, CL, CL-ML	A-4	0	0	95-100	95-100	90-100	70-95	20-30	3-10
Cc------------ Carlisle	0-80	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
ChB, ChC, ChD, ChE---------- Charlton	0-8	Loam----------	SM, ML	A-2, A-4	---	0-5	85-95	75-90	50-85	25-65	<25	NP-5
	8-30	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	---	0-15	65-90	60-90	40-80	20-65	<25	NP-3

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
ChB, ChC, ChD, ChE---------Charlton	30-72	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM, GM	A-2, A-4	---	5-25	60-90	55-85	40-75	20-45	---	NP
ClC, ClD, ClE-Charlton	0-8	Very stony loam.	SM, ML	A-2, A-4	---	10-20	75-95	70-90	60-85	30-70	<25	NP-5
	8-30	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	---	0-15	65-90	60-90	50-80	20-65	<25	NP-3
	30-72	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam, gravelly loam	SM, GM	A-2, A-4	---	5-25	60-90	55-85	40-75	20-45	---	NP
CrB*, CrC*, CrD*, CrE*:												
Charlton----	0-8	Loam----------	SM, ML	A-2, A-4	---	0-5	85-95	75-90	50-85	25-65	<25	NP-5
	8-30	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	---	0-15	65-90	60-90	40-80	20-65	<25	NP-3
	30-72	Gravelly sandy loam, gravelly fine sandy loam, loam, gravelly loam	SM, GM	A-2, A-4	---	5-25	60-90	55-85	40-75	20-45	---	NP
Chatfield---	0-9	Fine sandy loam.	SM, ML, SC-SM, CL-ML	A-4, A-2	0	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	9-30	Silt loam, gravelly loam, loam, flaggy sandy loam, gravelly fine sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0	0-10	60-95	55-90	35-75	15-75	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
CrB*, CrC*, CrD*, CrE*:												
Chatfield---												
Rock outcrop**	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
CtB*, CtC*, CtD*:												
Chatfield---	0-9	Fine sandy loam.	SM, ML, SC-SM, CL-ML	A-4, A-2	0	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	9-30	Silt loam, gravelly loam, loam, flaggy sandy loam, gravelly fine sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0	0-10	60-95	55-90	35-75	15-75	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Hollis------	0-3	Loam----------	SM, ML	A-2, A-4	---	0-5	85-100	75-95	50-85	25-65	<25	NP-5
	3-15	Gravelly fine sandy loam, sandy loam, loam.	SM, ML, GM	A-2, A-4	---	0-15	65-100	60-95	40-80	20-65	<25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop***	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
CuA----------- Copake	0-6	Gravelly silt loam.	ML, SM, GM	A-1, A-2, A-4	---	0-5	60-80	55-75	40-70	20-60	<25	NP-4
	6-36	Gravelly loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	---	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	36-80	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	---	0-20	40-75	30-70	15-50	2-20	---	NP
CuB----------- Copake	0-6	Gravelly loam	ML, SM, GM	A-1, A-2, A-4	---	0-5	60-80	55-75	40-70	20-60	<25	NP-4
	6-36	Gravelly loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	---	0-10	60-95	55-90	40-85	20-80	<25	NP-4

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
CuB----------- Copake	36-80	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	---	0-20	40-75	30-70	15-50	2-20	---	NP
CuC, CuD, CuE- Copake	0-6	Gravelly silt loam.	ML, SM, GM	A-1, A-2, A-4	---	0-5	60-80	55-75	40-70	20-60	<25	NP-4
	6-36	Gravelly loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	---	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	36-80	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	---	0-20	40-75	30-70	15-50	2-20	---	NP
CwA, CwB------ Copake	0-6	Channery silt loam.	ML, SM, GM	A-1, A-2, A-4	---	0-5	60-80	55-75	40-70	20-60	<25	NP-4
	6-36	Channery loam, channery silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	---	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	36-80	Stratified channery loamy fine sand to channery coarse sand.	GM, SM, GP, SP	A-1	---	0-20	40-75	30-70	15-50	2-20	---	NP
CxB*:												
Copake-------	0-6	Gravelly silt loam.	ML, SM, GM	A-1, A-2, A-4	---	0-5	60-80	55-75	40-70	20-60	<25	NP-4
	6-36	Gravelly loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	---	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	36-80	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	---	0-20	40-75	30-70	15-50	2-20	---	NP
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DuB, DuC, DuD-- Dutchess	0-8	Silt loam-----	ML	A-4	0	0-15	95-100	90-95	80-95	55-85	<33	NP-4
	8-28	Silt loam, channery silt loam, gravelly loam.	ML, SM, GM	A-4	0	5-25	70-100	65-95	55-95	40-85	<33	NP-4
	28-86	Channery silt loam, very channery fine sandy loam, very gravelly sandy loam.	ML, SM, GM	A-4, A-2-4, A-1-B	0	5-25	55-80	50-75	30-75	15-65	<25	NP-4
DwB*, DwC*, DwD*:												
Dutchess----	0-8	Silt loam-----	ML	A-4	0	0-15	95-100	90-95	80-95	55-85	<33	NP-4
	8-28	Silt loam, channery silt loam, gravelly loam.	ML, SM, GM	A-4	0	5-25	70-100	65-95	55-95	40-85	<33	NP-4
	28-86	Channery silt loam, very channery fine sandy loam, very gravelly sandy loam.	ML, SM, GM	A-4, A-2-4, A-1-B	0	5-25	55-80	50-75	30-75	15-65	<25	NP-4
Cardigan----	0-8	Channery silt loam.	SM, ML	A-4	---	0-5	80-95	70-95	60-75	35-70	<33	NP-5
	8-20	Silt loam, loam, channery loam, channery silt loam.	ML, SM	A-4	---	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	20-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	---	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
DxB*, DxC*:												
Dutchess-----	0-8	Silt loam-----	ML	A-4	0	0-15	95-100	90-95	80-95	55-85	<33	NP-4
	8-28	Silt loam, channery silt loam, gravelly loam.	ML, SM, GM	A-4	0	5-25	70-100	65-95	55-95	40-85	<33	NP-4

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DxB*, DxC*:												
Dutchess------	28-86	Channery silt loam, very channery fine sandy loam, very gravelly sandy loam.	ML, SM, GM	A-4, A-2-4, A-1-B	0	5-25	55-80	50-75	30-75	15-65	<25	NP-4
Cardigan-----	0-8	Channery silt loam.	SM, ML	A-4	---	0-5	80-95	70-95	60-75	35-70	<33	NP-5
	8-20	Silt loam, loam, channery loam, channery silt loam.	ML, SM	A-4	---	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	20-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	---	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
Rock outcrop	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
FcB*, FcC*, FcD*:												
Farmington--	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, very fine sandy loam, fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Galway------	0-6	Gravelly loam	ML, GM, SM	A-2, A-6, A-7	0-1	0-25	55-80	50-75	45-75	30-65	35-45	10-15
	6-30	Loam, silt loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-1	0-10	60-95	50-95	35-90	20-75	20-40	3-15
	30-31	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-1	0-10	20-90	15-85	10-85	5-75	<20	NP-3

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
FcB*, FcC*, FcD*:												
Galway												
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop***	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
FeE*:												
Farmington---	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Ff*:												
Fluvaquents--	0-5	Silt loam-----	ML, SM, CL, GM	A-1, A-2, A-4	0	0-10	60-100	55-100	30-100	10-90	<25	NP-15
	5-72	Very gravelly sand, gravelly silt loam, silty clay loam.	GM, ML, SC-SM, CL	A-1, A-2, A-6	0	0-15	35-100	30-100	15-100	5-90	<30	NP-20
Udifluvents--	0-4	Gravelly loam	ML, SM, CL, GM	A-1, A-2, A-4	---	0-10	60-80	55-75	30-75	10-65	<25	NP-20
	4-70	Very gravelly sand, gravelly loam, silty clay loam.	GM, ML, SP, CL	A-1, A-2, A-4, A-6	---	0-15	35-100	30-100	15-100	5-90	<30	NP-20
Fr------------ Fredon	0-9	Silt loam-----	ML, CL, CL-ML	A-4	0	0-2	95-100	85-95	75-90	60-80	15-30	NP-10
	9-31	Loam, silt loam, gravelly silt loam, very fine sandy loam, gravelly loam	SM, SC, ML, CL	A-2, A-4, A-1	0	0-2	60-100	50-95	30-85	15-70	15-30	NP-10

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Fr: Fredon	31-70	Stratified very gravelly sand to loamy fine sand.	GP, GM, GW, GW-GM	A-1, A-2, A-3	0	0-5	30-90	25-85	10-60	0-35	10-20	NP-5
GfB*: Galway	0-6	Gravelly loam	ML, GM, SM	A-2, A-6, A-7	0-1	0-25	55-80	50-75	45-75	30-65	35-45	10-15
	6-30	Loam, silt loam, gravelly loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-1	0-10	60-95	50-95	35-90	20-75	20-40	3-15
	30-31	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-1	0-10	20-90	15-85	10-85	5-75	<20	NP-3
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Farmington	0-7	Loam	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop**	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
GfC*: Galway	0-6	Gravelly loam	ML, GM, SM	A-2, A-6, A-7	0-1	0-25	55-80	50-75	45-75	30-65	35-45	10-15
	6-30	Loam, silt loam, gravelly loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-1	0-10	60-95	50-95	35-90	20-75	20-40	3-15
	30-31	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-1	0-10	20-90	15-85	10-85	5-75	<20	NP-3
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
GfC*:												
Farmington---	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, sandy loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop**--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
GfD*:												
Galway-------	0-6	Gravelly loam	ML, GM, SM	A-2, A-6, A-7	0-1	0-25	55-80	50-75	45-75	30-65	35-45	10-15
	6-30	Loam, silt loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-1	0-10	60-95	50-95	35-90	20-75	20-40	3-15
	30-31	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-1	0-10	20-90	15-85	10-85	5-75	<20	NP-3
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Farmington---	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop**--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
GlB*, GlC*:												
Galway-------	0-6	Gravelly loam	ML, GM, SM	A-2, A-6, A-7	0-1	0-25	55-80	50-75	45-75	30-65	35-45	10-15
	6-30	Loam, silt loam, gravelly loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-1	0-10	60-95	50-95	35-90	20-75	20-40	3-15

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
GlB*, GlC*:												
Galway-------	30-31	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-1	0-10	20-90	15-85	10-85	5-75	<20	NP-3
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Farmington---	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
Rock outcrop**--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
GsA, GsB, GsC- Georgia	0-8	Silt loam-----	ML, CL, CL-ML	A-4	---	0-10	90-100	85-100	70-100	50-90	<30	NP-10
	8-27	Loam, silt loam, very gravelly fine sandy loam.	ML, SM, CL, SC	A-4, A-2	---	0-20	50-100	45-100	30-95	20-80	<25	NP-10
	27-80	Loam, very gravelly fine sandy loam, silt loam gravelly fine sandy loam.	ML, SM, CL, SC	A-4, A-2	---	0-20	50-100	45-100	30-95	20-80	<25	NP-10
Ha------------ Halsey	0-9	Mucky silt loam.	ML, CL, SM	A-2, A-4	---	0-2	80-100	75-100	35-90	25-90	20-30	3-10
	9-33	Loam, silt loam, gravelly loam, gravelly fine sandy loam.	SM, GC, ML, CL	A-2, A-4	---	0-2	65-100	50-100	35-90	30-85	20-30	3-10
	33-72	Stratified sandy loam to very gravelly sand.	SP, GP, GM, SM	A-1, A-2, A-3	---	5-10	30-90	25-85	20-70	0-35	---	NP

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
HeA, HeB------ Haven	0-12	Loam----------	ML, SM	A-4	0	0	80-100	75-100	65-100	40-90	<25	NP-4
	12-23	Gravelly loam, silt loam, loam, gravelly sandy loam.	ML, SM	A-4, A-2, A-1	0	0	60-100	55-95	40-95	20-85	<25	NP-4
	23-72	Stratified loamy fine sand to gravel.	SP, SW, GP, SM	A-1, A-3, A-2	---	0-20	30-90	25-85	10-60	1-25	<10	NP
Hf*:												
Haven--------	0-12	Loam----------	ML, SM	A-4	0	0	80-100	75-100	65-100	40-90	<25	NP-4
	12-23	Gravelly loam, silt loam, loam, gravelly sandy loam.	ML, SM	A-4, A-2, A-1	0	0	60-100	55-95	40-95	20-85	<25	NP-4
	23-72	Stratified loamy fine sand to gravel.	SP, SW, GP, SM	A-1, A-3, A-2	---	0-20	30-90	25-85	10-60	1-25	<10	NP
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
HoC*, HoD*:												
Hollis-------	0-3	Loam----------	SM, ML	A-2, A-4	---	0-5	85-100	75-95	50-85	25-65	<25	NP-5
	3-15	Gravelly fine sandy loam, sandy loam, loam.	SM, ML, GM	A-2, A-4	---	0-15	65-100	60-95	40-80	20-65	<25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Chatfield----	0-9	Fine sandy loam.	SM, ML, SC-SM, CL-ML	A-4, A-2	0	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	9-30	Silt loam, gravelly loam, loam, flaggy sandy loam, gravelly fine sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0	0-10	60-95	55-90	35-75	15-75	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HoE*, HoF*:												
Hollis	0-3	Loam	SM, ML	A-2, A-4	---	0-5	85-100	75-95	50-85	25-65	<25	NP-5
	3-15	Gravelly fine sandy loam, sandy loam, loam.	SM, ML, GM	A-2, A-4	---	0-15	65-100	60-95	40-80	20-65	<25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Chatfield	0-9	Fine sandy loam.	SM, ML, SC-SM, CL-ML	A-4, A-2	0	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	9-30	Silt loam, gravelly loam, loam, flaggy sandy loam, gravelly fine sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0	0-10	60-95	55-90	35-75	15-75	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
HsA, HsB, HsC, HsD, HsE Hoosic	0-9	Gravelly loam	GM, SM, ML	A-1, A-2, A-4, A-5	0	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	9-24	Gravelly sandy loam, very gravelly sandy loam, gravelly loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	0	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	24-70	Very gravelly sand, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP, SP, SM	A-1	0	10-15	30-65	25-50	15-40	2-20	---	NP
HtA, HtB Hoosic	0-9	Channery loam	GM, SM, ML	A-1, A-2, A-4	---	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	9-24	Gravelly sandy loam, very channery sandy loam, channery loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	---	5-10	40-75	35-65	20-60	10-45	20-30	2-8

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
HtA, HtB-----Hoosic-----	24-70	Very gravelly sand, very channery loamy sand, extremely channery sand.	GM, GP, SP, SM	A-1	---	10-15	35-65	30-50	15-40	2-20	---	NP
HuA*, HuB*:												
Hoosic-------	0-9	Gravelly loam	GM, SM, ML	A-1, A-2, A-4, A-5	0	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	9-24	Gravelly sandy loam, very gravelly sandy loam, gravelly loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	0	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	24-70	Very gravelly sand, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP, SP, SM	A-1	0	10-15	30-65	25-50	15-40	2-20	---	NP
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
HvB*, HvC*, HvD*, HvE*:												
Hudson------	0-12	Silt loam-----	ML, CL-ML, OL, CL	A-4, A-6, A-7	0	0	95-100	95-100	85-100	65-95	25-48	5-19
	12-18	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	0	95-100	90-100	80-100	80-100	35-65	15-35
	18-25	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	0	95-100	90-100	80-100	80-100	35-65	15-35
	25-72	Silty clay, silt loam, clay, silty clay loam.	CL, CH	A-7, A-6	0	0	95-100	90-100	80-100	60-100	35-65	15-35
Vergennes---	0-11	Silty clay loam.	MH, CH	A-7	0	0	100	100	90-100	85-100	40-80	20-40
	11-28	Clay----------	MH, CH	A-7	0	0	100	100	95-100	75-100	50-80	20-45
	28-37	Clay----------	MH, CH	A-7	0	0	100	100	95-100	95-100	50-80	20-45
	37-80	Clay----------	MH, CH	A-7	0	0	100	100	95-100	95-100	50-80	20-45

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Hy*:												
Hydraquents--	0-9	Mucky silty clay loam.	CL	A-6	0	0-5	90-100	85-100	75-100	65-90	30-50	15-30
	9-70	Gravelly loamy sand, silt loam, silty clay.	ML, CL, SM	A-2, A-4, A-6	0	0-10	60-100	55-100	30-100	15-90	10-50	NP-30
Medisaprists-	0-70	Mucky-peat----	PT	A-8	---	---	---	---	---	---	---	---
Kn*:												
Kingsbury----	0-14	Silty clay loam.	ML, MH	A-7	0	0	100	100	90-100	80-95	40-55	11-20
	14-38	Clay----------	MH, CH	A-7	0	0	100	100	90-100	90-100	50-65	21-35
	38-72	Clay, silty clay, silty clay loam.	MH, CH	A-7	0	0	100	100	90-100	85-100	50-65	21-35
Rhinebeck----	0-9	Silt loam-----	ML, MH, CL, CH	A-6, A-7	0	0	80-100	75-100	70-100	60-90	30-55	10-25
	9-31	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	0	90-100	85-100	80-100	70-100	30-55	15-30
	31-72	Silty clay loam, clay, silt loam.	CH, CL	A-7, A-6	0	0	90-100	85-100	80-100	70-100	30-55	15-30
KrA, KrB, KrC, KrD---------- Knickerbocke	0-10	Fine sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	10-19	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	19-30	Loamy fine sand, loamy sand.	SP-SM, SM	A-1-B, A-2-4	0	0	75-100	75-100	40-75	10-30	---	NP
	30-72	Loamy fine sand, loamy sand, sand.	SP-SM, SM	A-1, A-2-4, A-3	0	0	75-100	75-100	40-75	5-15	---	NP
KuA*:												
Knickerbocker	0-10	Fine sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	10-19	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	19-30	Loamy fine sand, loamy sand.	SP-SM, SM	A-1-B, A-2-4	0	0	75-100	75-100	40-75	10-30	---	NP
	30-72	Loamy fine sand, loamy sand, sand.	SP-SM, SM	A-1, A-2-4, A-3	0	0	75-100	75-100	40-75	5-15	---	NP

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
KuA*:												
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
KuB*:												
Knickerbocker	0-10	Fine sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	10-19	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4, A-1-B	0	0	75-100	75-100	40-85	20-55	---	NP
	19-32	Loamy fine sand, loamy sand.	SP-SM, SM	A-1-B, A-2-4	0	0	75-100	75-100	40-75	10-30	---	NP
	32-72	Loamy fine sand, loamy sand, sand.	SP-SM, SM	A-1, A-2-4, A-3	0	0	75-100	75-100	40-75	5-15	---	NP
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
Ln------------ Linlithgo	0-9	Silt loam-----	ML	A-4, A-7	0	0	100	95-100	80-100	60-90	35-45	5-15
	9-21	Silt loam, loam, gravelly loam.	CL, SC, CL-ML	A-4, A-6	0	0-5	75-100	70-100	60-100	35-90	20-30	5-15
	21-72	Loamy sand, very gravelly sand, very gravelly loamy coarse sand, gravelly fine sand.	SM, SW-SM, GM, GW-GM	A-1	0	0-10	30-90	25-85	15-60	5-25	---	NP
Lv------------ Livingston	0-8	Silty clay loam.	MH, ML	A-7	0	0	100	100	90-100	85-100	40-85	10-40
	8-30	Clay----------	MH	A-7	0	0	100	100	100	95-100	50-85	20-40
	30-38	Clay----------	MH	A-7	0	0	100	100	100	95-100	50-85	20-40
	38-72	Clay----------	MH	A-7	0	0	100	100	100	95-100	50-85	20-40
McC*:												
Macomber-----	0-4	Channery silt loam.	GM, SM, ML, CL-ML	A-2, A-4, A-6	---	0-15	55-80	50-75	40-75	30-70	15-35	3-15
	4-24	Very channery silt loam, very channery loam, extremely channery loam.	GM, GM-GC, GC	A-1, A-2, A-4	---	5-15	30-55	25-50	20-50	15-45	15-30	3-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Taconic------	0-3	Channery silt loam.	GM, SM, ML, CL-ML	A-2, A-4, A-6	0-1	0-15	55-80	50-75	40-75	30-70	15-35	3-15

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
McC*:												
Taconic------	3-12	Very channery silt loam, very channery loam.	GM, GC, GM-GC	A-1, A-2, A-4, A-6	0-1	5-15	30-60	25-55	20-55	15-50	15-35	3-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	15-30	3-15
Rock outcrop***--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
MnA, MnB------ Massena	0-7	Silt loam-----	CL, SC	A-6, A-7	0	0	80-95	75-90	65-90	45-80	35-45	12-20
	7-33	Gravelly fine sandy loam, gravelly sandy loam, loam, fine sandy loam.	GC, CL, CL-ML, SC-SM	A-4, A-6, A-2, A-1	0	0-5	55-95	50-90	35-85	15-65	15-25	5-15
	33-72	Fine sandy loam, gravelly loam, very gravelly sandy loam.	GC, CL, SC, CL-ML	A-4, A-6, A-2, A-1	0	0-5	40-95	35-90	20-85	10-65	15-25	5-15
NwB*:												
Nassu--------	0-5	Channery silt loam.	ML, GM, SM	A-2, A-4	0	5-20	55-85	45-80	30-75	25-70	25-37	1-10
	5-16	Very channery silt loam, very channery loam.	GM, GM-GC	A-2, A-4, A-1	0	10-25	30-60	25-55	20-55	15-50	20-35	1-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cardigan-----	0-8	Channery silt loam.	SM, ML	A-4	---	0-5	80-95	70-95	60-75	35-70	<33	NP-5
	8-20	Silt loam, loam, channery loam, channery silt loam.	ML, SM	A-4	---	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	20-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	---	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop***--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
NwC*, NwD*:												
Nassau-------	0-5	Channery silt loam.	ML, GM, SM	A-2, A-4	0	5-20	55-85	45-80	30-75	25-70	25-37	1-10
	5-16	Very channery silt loam, very channery loam.	GM, GM-GC	A-2, A-4, A-1	0	10-25	30-60	25-55	20-55	15-50	20-35	1-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cardigan-----	0-8	Channery silt loam.	SM, ML	A-4	---	0-5	80-95	70-95	60-75	35-70	<33	NP-5
	8-20	Silt loam, loam, channery silt loam.	ML, SM	A-4	---	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	20-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	---	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
NxE*, NxF*:												
Nassau-------	0-5	Channery silt loam.	ML, GM, SM	A-2, A-4	0	5-20	55-85	45-80	30-75	25-70	25-37	1-10
	5-16	Very channery silt loam, very channery loam.	GM, GM-GC	A-2, A-4, A-1	0	10-25	30-60	25-55	20-55	15-50	20-35	1-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pc------------ Palms, maat<50	0-12	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
	12-30	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
	30-80	Clay loam, silty clay loam, gravelly fine sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-7, A-2	0	0	85-100	60-100	35-95	15-90	20-45	5-20
Pg------------ Pawling	0-8	Silt loam-----	CL-ML, ML, CL	A-4	0	0	90-100	85-100	70-95	55-80	20-30	3-10
	8-33	Silt loam, loam, fine sandy loam.	SM, ML, CL-ML, SC	A-4	0	0	90-100	85-100	60-95	35-80	20-30	3-10

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
Pg------------ Pawling	33-72	Gravelly loamy sand, very gravelly sand, gravelly sand.	GW, GP, SW, SP	A-1, A-2, A-3	0	0-5	25-80	20-75	10-55	0-20	---	NP
Ps*----------- Pits, gravel	0-6	Extremely gravelly sand.	GP, GW	A-1	---	0-25	10-25	5-25	0-15	0-5	---	NP
	6-60	Extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand.	GP, GW, SP, SW	A-1	---	0-25	10-55	5-50	0-15	0-5	---	NP
Pu*----------- Pits, quarry	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
PwB, PwC------ Pittstown	0-8	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	---	0-5	80-100	70-95	65-95	50-85	25-45	4-15
	8-22	Silt loam, channery loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-2, A-4	---	0-15	65-95	60-90	50-90	30-80	20-35	2-10
	22-80	Channery silt loam, channery loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-2, A-4	---	0-15	60-95	55-85	45-85	30-75	20-30	2-10
PzA, PzB------ Punsit	0-6	Silt loam-----	ML	A-4	---	0-5	90-100	85-95	75-95	60-85	20-35	NP-10
	6-17	Loam, silt loam, gravelly loam.	ML, GM, SM	A-4	---	0-5	65-100	60-95	50-95	40-85	20-35	NP-10
	17-80	Loam, silt loam, gravelly loam.	ML, GM, SM	A-4	---	0-10	55-90	50-85	40-80	35-75	15-30	NP-7
Ra------------ Raynham	0-8	Silt loam-----	ML, CL-ML	A-4	0	0	100	95-100	80-100	55-95	<25	NP-5
	8-30	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	0	100	95-100	80-100	55-95	<25	NP-5
	30-80	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	0	100	95-100	80-100	70-95	<25	NP-5

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Sc------------ Scio	0-8	Silt loam-----	ML	A-4	0	0	100	95-100	90-100	70-90	<20	NP-4
	8-34	Silt loam, very fine sandy loam.	ML	A-4	0	0	100	95-100	90-100	70-90	<20	NP-4
	34-72	Stratified very gravelly sand to silt loam.	ML, SM, SP, GP-GM	A-4, A-2, A-1, A-3	0	0	35-95	30-90	15-85	2-80	<10	NP-4
SkB, SkC, SkD, SkE---------- Stockbridge	0-6	Silt loam-----	ML, CL-ML	A-4	---	0-10	80-95	75-90	65-85	50-75	20-40	3-12
	6-23	Loam, silt loam, gravelly loam.	ML, CL-ML	A-4	---	0-10	70-95	65-90	60-85	50-75	20-40	3-12
	23-80	Gravelly loam, silt loam, very gravelly fine sandy loam.	ML, CL-ML, SM, GM	A-2, A-4	---	0-10	50-90	35-85	30-80	25-75	15-40	NP-12
SmB*, SmC*, SmD*:												
Stockbridge-	0-6	Silt loam-----	ML, CL-ML	A-4	---	0-10	80-95	75-90	65-85	50-75	20-40	3-12
	6-23	Loam, silt loam, gravelly loam.	ML, CL-ML	A-4	---	0-10	70-95	65-90	60-85	50-75	20-40	3-12
	23-80	Gravelly loam, silt loam, very gravelly fine sandy loam.	ML, CL-ML, SM, GM	A-2, A-4	---	0-10	50-90	35-85	30-80	25-75	15-40	NP-12
Farmington--	0-7	Loam----------	ML, CL, SM, SC	A-2, A-4, A-6	0	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	7-15	Silt loam, loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop**--	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
SrB*:												
Stockbridge--	0-6	Silt loam-----	ML, CL-ML	A-4	---	0-10	80-95	75-90	65-85	50-75	20-40	3-12
	6-23	Loam, silt loam, gravelly loam.	ML, CL-ML	A-4	---	0-10	70-95	65-90	60-85	50-75	20-40	3-12
	23-80	Gravelly loam, silt loam, very gravelly fine sandy loam.	ML, CL-ML, SM, GM	A-2, A-4	---	0-10	50-90	35-85	30-80	25-75	15-40	NP-12
Urban land---	0-6	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
Su------------ Sun	0-4	Silt loam-----	ML, CL-ML, SM, SC-SM	A-1, A-2, A-4	0	0-5	80-100	75-100	45-95	20-85	<10	NP-5
	4-22	Gravelly fine sandy loam, sandy loam, gravelly loam, silt loam, loam.	GM, ML, SM, SC-SM	A-1, A-2, A-4	0	0-5	55-95	50-90	30-85	15-65	<10	NP-5
	22-80	Gravelly fine sandy loam, gravelly loam, very gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2, A-4	0	0-5	45-75	40-70	25-65	15-50	<10	NP-5
TmD*:												
Taconic------	0-3	Channery silt loam.	GM, SM, ML, CL-ML	A-2, A-4, A-6	0-1	0-15	55-80	50-75	40-75	30-70	15-35	3-15
	3-12	Very channery silt loam, very channery loam.	GM, GC, GM-GC	A-1, A-2, A-4, A-6	0-1	5-15	30-60	25-55	20-55	15-50	15-35	3-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	15-30	3-15
Macomber-----	0-4	Channery silt loam.	GM, SM, ML, CL-ML	A-2, A-4, A-6	---	0-15	55-80	50-75	40-75	30-70	15-35	3-15
	4-24	Very channery silt loam, very channery loam, extremely channery loam	GM, GM-GC, GC	A-1, A-2, A-4	---	5-15	30-55	25-50	20-50	15-45	15-30	3-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
TrE*, TrF*:												
Taconic------	0-3	Channery silt loam.	GM, SM, ML, CL-ML	A-2, A-4, A-6	0-1	0-15	55-80	50-75	40-75	30-70	15-35	3-15
	3-12	Very channery silt loam, very channery loam.	GM, GC, GM-GC	A-1, A-2, A-4, A-6	0-1	5-15	30-60	25-55	20-55	15-50	15-35	3-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	15-30	3-15
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
Ud*----------- Udorthents	0-4	Loam----------	SM, ML, CL, SC	A-2, A-4, A-6	---	0-5	80-100	75-100	55-100	30-95	<45	NP-15
	4-70	Very gravelly sandy loam, channery loam, silty clay loam.	GM, SC, ML, CL	A-1, A-2, A-4, A-6	---	0-10	35-100	30-100	20-100	10-95	<45	NP-15
Ue*----------- Udorthents	0-4	Loam----------	SM, ML	A-2, A-4, A-6, A-3	0	0-5	80-100	75-100	40-100	5-95	10-45	NP-15
	4-72	Very gravelly loamy sand, channery loam, silty clay loam.	GM, ML	A-1, A-2, A-4, A-6	0-1	0-15	35-100	30-100	20-100	5-95	10-45	NP-15
UnB----------- Unadilla	0-9	Silt loam-----	ML	A-4	0	0	100	95-100	90-100	70-90	<35	NP-10
	9-70	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0	100	95-100	90-100	70-90	<25	NP-10
Ur*----------- Urban land	0-6	Variable------	---	---	---	---	---	---	---	---	---	---
We------------ Wappinger	0-9	Loam----------	CL-ML, ML, CL	A-4	0	0	90-100	85-100	70-95	55-80	20-30	3-10
	9-33	Loam, fine sandy loam, silt loam.	CL-ML, ML, SM, SC	A-4	0	0	90-100	85-100	60-95	35-80	20-30	3-10
	33-37	Sandy loam, fine sandy loam.	CL-ML, ML, SM, SC	A-2, A-4	0	0	90-100	85-100	50-85	25-55	20-30	3-10
	37-72	Very gravelly sand, gravelly loamy sand, gravelly sand, extremely gravelly sand	GW, GP, SW, SP	A-1, A-2, A-3	---	0-3	25-80	20-75	10-55	0-20	---	NP
Wy------------ Wayland	0-9	Silt loam-----	ML, OL	A-7, A-5	0	0	100	95-100	90-100	70-95	40-50	5-15
	9-80	Silt loam, silty clay loam.	ML, CL-ML, CL	A-6, A-7, A-7, A-4	0	0	100	95-100	90-100	70-95	25-45	5-15

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.
See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cc	In/hr	In/in	pH				Pct
BeB, BeC, BeD, BeE: Bernardston	0-8	2-12	1.00-1.15	0.6-2.0	0.15-0.22	4.5-6.0	Low	0.28	3	2-5
	8-27	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	Low	0.37		
	27-80	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	Low	0.28		
BgB*:										
Bernardston	0-8	2-12	1.00-1.15	0.6-2.0	0.15-0.22	4.5-6.0	Low	0.28	3	2-5
	8-27	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	Low	0.37		
	27-80	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	Low	0.28		
Urban land	0-6	---	---	---	---	---	---	---	---	
Ca: Canandaigua	0-6	18-35	1.20-1.40	0.2-0.6	0.17-0.22	6.1-7.8	Low	0.49	5	4-15
	6-40	18-35	1.20-1.40	0.2-0.6	0.19-0.20	5.6-7.3	Low	0.49		
	40-72	18-45	1.15-1.40	0.2-0.6	0.19-0.21	6.1-7.3	Low	0.49		
Cc: Carlisle	0-80	---	0.13-0.23	0.2-6.0	0.35-0.45	4.5-7.3	---	---	5	>70
ChB, ChC, ChD, ChE: Charlton	0-8	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low	0.24	3	2-5
	8-30	3-8	1.40-1.65	0.6-6.0	0.07-0.20	4.5-6.0	Low	0.24		
	30-72	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
ClC, ClD, ClE: Charlton	0-8	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low	0.20	3	---
	8-30	3-8	1.40-1.65	0.6-6.0	0.07-0.20	4.5-6.0	Low	0.24		
	30-72	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
CrB*, CrC*, CrD*, CrE*:										
Charlton	0-8	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low	0.24	3	2-5
	8-30	3-8	1.40-1.65	0.6-6.0	0.07-0.20	4.5-6.0	Low	0.24		
	30-72	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
Chatfield	0-9	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-10
	9-30	7-18	1.20-1.50	0.6-6.0	0.08-0.18	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	---	---		
Rock outcrop**	0-60	---	---	---	---	---	---	---	---	---
CtB*, CtC*, CtD*:										
Chatfield	0-9	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-10
	9-30	7-18	1.20-1.50	0.6-6.0	0.08-0.18	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	---	---		
Hollis	0-3	3-10	1.10-1.40	0.6-6.0	0.12-0.20	4.5-6.0	Low	0.24	1	2-5
	3-15	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	15	---	---	---	---	---	---	---		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
CtB*, CtC*, CtD*:										
Rock outcrop***-	0-60	---	---	---	---	---	-------------	----	---	---
CuA, CuB, CuC, CuD, CuE, CwA, CwB-------------	0-6	4-18	1.10-1.40	0.6-6.0	0.10-0.18	4.5-7.3	Low----------	0.24	3	2-5
Copake	6-36	4-18	1.25-1.55	0.6-6.0	0.10-0.20	5.1-7.3	Low----------	0.24		
	36-80	1-10	1.45-1.70	>20	0.01-0.06	6.1-8.4	Low----------	0.10		
CxB*:										
Copake----------	0-6	4-18	1.10-1.40	0.6-6.0	0.10-0.18	4.5-7.3	Low----------	0.24	3	2-5
	6-36	4-18	1.25-1.55	0.6-6.0	0.10-0.20	5.1-7.3	Low----------	0.24		
	36-80	1-10	1.45-1.70	>20	0.01-0.06	6.1-8.4	Low----------	0.10		
Urban land------	0-6	---	---	---	---	---	-------------	----	---	---
DuB, DuC, DuD----	0-8	4-10	1.00-1.20	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.32	3	3-8
Dutchess	8-28	4-10	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37		
	28-86	4-10	1.40-1.60	0.6-2.0	0.10-0.18	5.1-6.5	Low----------	0.32		
DwB*, DwC*, DwD*:										
Dutchess--------	0-8	4-10	1.00-1.20	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.32	3	3-8
	8-28	4-10	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37		
	28-86	4-10	1.40-1.60	0.6-2.0	0.10-0.18	5.1-6.5	Low----------	0.32		
Cardigan--------	0-8	8-18	1.00-1.20	0.6-2.0	0.10-0.17	4.5-6.0	Low----------	0.28	2	3-8
	8-20	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	Low----------	0.37		
	20-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.37		
	30	---	---	0.0-0.01	---	---	-------------	----		
Rock outcrop**--	0-60	---	---	---	---	---	-------------	----	---	---
DxB*, DxC*:										
Dutchess--------	0-8	4-10	1.00-1.20	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.32	3	3-8
	8-28	4-10	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37		
	28-86	4-10	1.40-1.60	0.6-2.0	0.10-0.18	5.1-6.5	Low----------	0.32		
Cardigan--------	0-8	8-18	1.00-1.20	0.6-2.0	0.10-0.17	4.5-6.0	Low----------	0.28	2	3-8
	8-20	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	Low----------	0.37		
	20-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.37		
	30	---	---	0.0-0.01	---	---	-------------	----		
Urban land------	0-6	---	---	---	---	---	-------------	----	---	---
Rock outcrop**--	0-60	---	---	---	---	---	-------------	----	---	---
FcB*, FcC*, FcD*:										
Farmington------	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low----------	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low----------	0.32		
	15	---	---	---	---	---	-------------	----		
Galway----------	0-6	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low----------	0.24	3	2-6
	6-30	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low----------	0.24		
	30-31	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low----------	0.24		
	31	---	---	---	---	---	-------------	----		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
FcB*, FcC*, FcD*:										
Rock outcrop***	0-60	---	---	---	---	---	-------------	----	---	---
FeE*:										
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Rock outcrop	0-60	---	---	---	---	---	-------------	----	---	---
Ff*:										
Fluvaquents	0-5	5-28	1.10-1.50	0.2-20	0.06-0.18	4.5-7.3	Low	0.32	3	0-5
	5-72	2-35	1.20-1.60	0.06-20	0.03-0.16	4.5-8.4	Low	0.28		
Udifluvents	0-4	5-28	1.10-1.50	0.2-20	0.03-0.15	4.5-7.3	Low	0.28	3	0-3
	4-70	2-35	1.20-1.70	0.06-20	0.03-0.16	4.5-8.4	Low	----		
Fr Fredon	0-9	7-20	1.20-1.40	0.6-2.0	0.16-0.20	5.6-7.3	Low	0.32	3	3-5
	9-31	7-20	1.20-1.40	0.2-2.0	0.12-0.20	5.6-7.3	Low	0.32		
	31-70	2-10	1.40-1.60	6.0-20	0.02-0.06	5.6-8.4	Low	0.10		
GfB*:										
Galway	0-6	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low	0.24	3	2-6
	6-30	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low	0.24		
	30-31	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low	0.24		
	31	---	---	---	---	---	-------------	----		
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Rock outcrop**	0-60	---	---	---	---	---	-------------	----	---	---
GfC*:										
Galway	0-6	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low	0.24	3	2-6
	6-30	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low	0.24		
	30-31	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low	0.24		
	31	---	---	---	---	---	-------------	----		
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Rock outcrop**	0-60	---	---	---	---	---	-------------	----	---	---
GfD*:										
Galway	0-6	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low	0.24	3	2-6
	6-30	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low	0.24		
	30-31	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low	0.24		
	31	---	---	---	---	---	-------------	----		
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	-------------	----		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
GfD*:										
Rock outcrop**	0-60	---	---	---	---	---	-------------	----	---	---
GlB*, GlC*:										
Galway	0-6	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low	0.24	3	2-6
	6-30	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low	0.24		
	30-31	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low	0.24		
	31	---	---	---	---	---	-------------	----		
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Urban land	0-6	---	---	---	---	---	-------------	----	---	---
Rock outcrop**	0-60	---	---	---	---	---	-------------	----	---	---
GsA, GsB, GsC Georgia	0-8	7-18	1.00-1.30	0.6-2.0	0.17-0.24	5.1-7.3	Low	0.32	3	3-8
	8-27	5-18	1.30-1.60	0.6-2.0	0.09-0.18	5.1-7.3	Low	0.32		
	27-80	10-18	1.60-1.80	0.06-0.2	0.08-0.18	5.1-7.3	Low	0.32		
Ha Halsey	0-9	7-25	0.50-1.00	0.6-2.0	0.20-0.30	5.6-7.3	Low	0.24	5	10-25
	9-33	7-25	1.20-1.40	0.6-6.0	0.12-0.18	5.6-7.3	Low	0.24		
	33-72	2-10	1.40-1.60	6.0-20	0.02-0.07	6.1-8.4	Low	0.10		
HeA, HeB Haven	0-12	5-18	1.10-1.40	0.6-2.0	0.15-0.25	4.5-6.0	Low	0.32	3	2-6
	12-23	2-18	1.25-1.55	0.6-2.0	0.08-0.12	4.5-6.0	Low	0.24		
	23-72	0-3	1.45-1.65	>20	0.01-0.03	4.5-6.0	Low	0.17		
Hf*:										
Haven	0-12	5-18	1.10-1.40	0.6-2.0	0.15-0.25	4.5-6.0	Low	0.32	3	2-6
	12-23	2-18	1.25-1.55	0.6-2.0	0.08-0.12	4.5-6.0	Low	0.24		
	23-72	0-3	1.45-1.65	>20	0.01-0.03	4.5-6.0	Low	0.17		
Urban land	0-6	---	---	---	---	---	-------------	----	---	---
HoC*, HoD*:										
Hollis	0-3	3-10	1.10-1.40	0.6-6.0	0.12-0.20	4.5-6.0	Low	0.24	1	2-5
	3-15	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Chatfield	0-9	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-10
	9-30	7-18	1.20-1.50	0.6-6.0	0.08-0.18	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	-------------	----		
Rock outcrop	0-60	---	---	---	---	---	-------------	----	---	---
HoE*, HoF*:										
Hollis	0-3	3-10	1.10-1.40	0.6-6.0	0.12-0.20	4.5-6.0	Low	0.24	1	2-5
	3-15	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	15	---	---	---	---	---	-------------	----		
Chatfield	0-9	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-10
	9-30	7-18	1.20-1.50	0.6-6.0	0.08-0.18	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	-------------	----		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
Rock outcrop----	0-60	---	---	---	---	---	-------------	----	---	---
HsA, HsB, HsC, HsD, HsE, HtA, HtB------------- Hoosic	0-9	1-10	1.10-1.40	2.0-20	0.05-0.12	4.5-5.5	Low----------	0.17	3	2-6
	9-24	1-10	1.25-1.55	2.0-20	0.05-0.11	4.5-5.5	Low----------	0.17		
	24-70	0-5	1.45-1.65	>20	0.01-0.05	4.5-6.0	Low----------	0.17		
HuA*, HuB*:										
Hoosic----------	0-9	1-10	1.10-1.40	2.0-20	0.05-0.12	4.5-5.5	Low----------	0.17	3	2-6
	9-24	1-10	1.25-1.55	2.0-20	0.05-0.11	4.5-5.5	Low----------	0.17		
	24-70	0-5	1.45-1.65	>20	0.01-0.05	4.5-6.0	Low----------	0.17		
Urban land------	0-6	---	---	---	---	---	-------------	----	---	---
HvB*, HvC*, HvD*, HvE*:										
Hudson---------	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-6
	12-18	35-60	1.15-1.40	<0.2	0.13-0.17	5.1-7.3	Moderate-----	0.28		
	18-25	25-60	1.15-1.40	<0.2	0.13-0.17	5.6-7.8	Moderate-----	0.28		
	25-72	35-60	1.15-1.40	<0.2	0.12-0.20	6.6-8.4	Moderate-----	0.28		
Vergennes------	0-11	27-90	1.25-1.55	0.06-0.6	0.11-0.21	4.5-7.3	Moderate-----	0.49	3	2-6
	11-28	60-90	1.10-1.40	<0.2	0.09-0.11	4.5-7.3	Moderate-----	0.49		
	28-37	60-90	1.10-1.40	<0.2	0.09-0.11	5.6-8.4	Moderate-----	0.49		
	37-80	60-90	1.20-1.50	<0.06	0.08-0.10	7.9-8.4	Moderate-----	0.49		
Hy*:										
Hydraquents-----	0-9	25-50	1.20-1.60	0.06-0.6	0.10-0.22	4.5-7.3	High---------	0.43	3	2-20
	9-70	5-50	1.10-1.70	0.06-20	0.03-0.21	4.5-8.4	Moderate-----	0.32		
Medisaprists----	0-70	---	0.30-0.60	0.2-20	0.35-0.45	4.5-7.3	Low----------	----	5	50-95
Kn*:										
Kingsbury-------	0-14	27-50	1.10-1.25	0.06-0.2	0.12-0.22	5.1-7.8	Moderate-----	0.49	3	3-9
	14-38	60-90	1.40-1.60	<0.06	0.12-0.13	5.1-7.8	High---------	0.28		
	38-72	35-90	1.40-1.50	<0.06	0.12-0.14	7.9-8.4	High---------	0.28		
Rhinebeck-------	0-9	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	9-31	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	31-72	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.1-8.4	Moderate-----	0.28		
KrA, KrB, KrC, KrD------------- Knickerbocker	0-10	5-12	1.10-1.40	2.0-6.0	0.11-0.17	4.5-6.0	Low----------	0.20	3	4-6
	10-19	5-12	1.25-1.55	2.0-6.0	0.11-0.17	4.5-6.0	Low----------	0.20		
	19-30	2-8	1.45-1.65	>6.0	0.06-0.08	4.5-6.0	Low----------	0.17		
	30-72	2-8	1.45-1.65	>6.0	0.03-0.08	4.5-6.0	Low----------	0.17		
KuA*:										
Knickerbocker---	0-10	5-12	1.10-1.40	2.0-6.0	0.11-0.17	4.5-6.0	Low----------	0.20	3	4-6
	10-19	5-12	1.25-1.55	2.0-6.0	0.11-0.17	4.5-6.0	Low----------	0.20		
	19-30	2-8	1.45-1.65	>6.0	0.06-0.08	4.5-6.0	Low----------	0.17		
	30-72	2-8	1.45-1.65	>6.0	0.03-0.08	4.5-6.0	Low----------	0.17		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
KuA*:										
Urban land	0-6	---	---	---	---	---	---	---	---	---
KuB*:										
Knickerbocker	0-10	5-12	1.10-1.40	2.0-6.0	0.11-0.17	4.5-6.0	Low	0.20	3	4-6
	10-19	5-12	1.25-1.55	2.0-6.0	0.11-0.17	4.5-6.0	Low	0.20		
	19-32	2-8	1.45-1.65	>6.0	0.06-0.08	4.5-6.0	Low	0.17		
	32-72	2-8	1.45-1.65	>6.0	0.03-0.08	4.5-6.0	Low	0.17		
Urban land	0-6	---	---	---	---	---	---	---	---	---
Ln Linlithgo	0-9	18-27	1.15-1.40	0.6-2.0	0.18-0.22	4.5-6.5	Low	0.49	4	2-6
	9-21	18-27	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.5	Low	0.49		
	21-72	0-10	1.50-1.60	2.0-20.0	0.01-0.06	5.6-7.3	Low	0.17		
Lv Livingston	0-8	35-90	1.10-1.60	0.2-0.6	0.11-0.23	5.1-7.3	Moderate	0.49	3	4-16
	8-30	60-90	1.30-1.45	<0.2	0.09-0.11	5.1-7.8	Moderate	0.49		
	30-38	60-90	1.30-1.45	<0.2	0.09-0.11	6.6-7.8	Moderate	0.49		
	38-72	60-90	1.30-1.50	<0.2	0.08-0.10	7.4-8.4	Moderate	0.49		
McC*:										
Macomber	0-4	10-27	1.10-1.40	0.6-2.0	0.10-0.17	4.5-5.5	Low	0.24	3	2-6
	4-24	10-27	1.20-1.50	0.6-2.0	0.04-0.11	4.5-5.5	Low	0.24		
	24	---	---	---	---	---	---	---		
Taconic	0-3	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24	2	2-6
	3-12	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24		
	12	---	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	Low	0.24		
Rock outcrop***	0-60	---	---	---	---	---	---	---	---	---
MnA, MnB Massena	0-7	8-22	1.10-1.40	0.6-2.0	0.14-0.20	5.6-7.3	Low	0.28	3	3-8
	7-33	7-18	1.20-1.50	0.06-0.6	0.08-0.15	5.6-7.3	Low	0.20		
	33-72	7-18	1.70-1.95	0.06-0.6	0.06-0.14	6.6-8.4	Low	0.20		
NwB*:										
Nassu	0-5	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low	0.20	2	3-5
	5-16	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low	0.20		
	16	---	---	0.00-0.6	---	---	---	---		
Cardigan	0-8	8-18	1.00-1.20	0.6-2.0	0.10-0.17	4.5-6.0	Low	0.28	2	3-8
	8-20	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	Low	0.37		
	20-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	Low	0.37		
	30	---	---	0.0-0.01	---	---	---	---		
Rock outcrop***	0-60	---	---	---	---	---	---	---	---	---
NwC*, NwD*:										
Nassau	0-5	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low	0.20	2	3-5
	5-16	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low	0.20		
	16	---	---	0.00-0.6	---	---	---	---		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
NwC*, NwD*:										
Cardigan	0-8	8-18	1.00-1.20	0.6-2.0	0.10-0.17	4.5-6.0	Low	0.28	2	3-8
	8-20	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	Low	0.37		
	20-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	Low	0.37		
	30	---	---	0.0-0.01	---	---	---	---		
Rock outcrop***	0-60	---	---	---	---	---	---	---	---	---
NxE*, NxF*:										
Nassau	0-5	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low	0.20	2	3-5
	5-16	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low	0.20		
	16	---	---	0.00-0.6	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
Pc Palms, maat<50	0-12	---	0.30-0.40	0.2-6.0	0.35-0.45	5.1-7.8	---	---	5	>75
	12-30	---	0.15-0.30	0.2-6.0	0.35-0.45	5.1-7.8	---	---		
	30-80	7-35	1.45-1.75	0.2-2.0	0.14-0.22	6.1-8.4	Low	0.37		
Pg Pawling	0-8	6-18	1.15-1.40	0.6-2.0	0.14-0.21	5.1-6.0	Low	0.49	3	4-6
	8-33	6-18	1.15-1.45	0.6-2.0	0.11-0.17	5.1-7.3	Low	0.49		
	33-72	1-8	1.25-1.55	2.0-20	0.01-0.11	5.6-7.3	Low	0.17		
Ps* Pits, gravel	0-6	0-1	---	>6.0	0.01-0.02	---	Low	0.02	---	<.1
	6-60	0-1	---	>6.0	0.01-0.02	---	Low	0.02		
Pu* Pits, quarry	0-60	---	---	---	---	---	---	---	---	---
PwB, PwC Pittstown	0-8	2-12	1.00-1.30	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.28	3	2-6
	8-22	2-12	1.30-1.60	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.37		
	22-80	2-12	1.70-2.00	0.06-0.6	0.10-0.15	4.5-6.0	Low	0.28		
PzA, PzB Punsit	0-6	1-18	1.10-1.40	0.6-2.0	0.16-0.21	5.6-6.5	Low	0.28	3	2-6
	6-17	1-18	1.30-1.60	0.6-2.0	0.10-0.19	5.6-6.5	Low	0.20		
	17-80	1-18	1.70-1.95	0.06-0.2	0.01-0.06	5.6-6.5	Low	0.20		
Ra Raynham	0-8	3-16	1.20-1.50	0.2-2.0	0.18-0.24	5.1-7.3	Low	0.49	3	3-10
	8-30	3-16	1.20-1.50	0.2-2.0	0.18-0.22	5.1-7.3	Low	0.64		
	30-80	3-16	1.20-1.60	0.06-0.2	0.17-0.21	5.6-7.8	Low	0.64		
Sc Scio	0-8	2-15	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low	0.49	3	2-8
	8-34	2-15	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low	0.24		
	34-72	0-5	1.45-1.65	2.0-20	0.02-0.19	5.1-7.8	Low	0.24		
SkB, SkC, SkD, SkE Stockbridge	0-6	5-18	1.00-1.25	0.6-2.0	0.14-0.24	5.1-7.3	Low	0.28	3	2-6
	6-23	5-18	1.40-1.65	0.6-2.0	0.12-0.22	5.6-7.3	Low	0.37		
	23-80	3-18	1.60-1.85	0.06-0.6	0.07-0.17	5.6-8.4	Low	0.24		
SmB*, SmC*, SmD*:										
Stockbridge	0-6	5-18	1.00-1.25	0.6-2.0	0.14-0.24	5.1-7.3	Low	0.28	3	2-6
	6-23	5-18	1.40-1.65	0.6-2.0	0.12-0.22	5.6-7.3	Low	0.37		
	23-80	3-18	1.60-1.85	0.06-0.6	0.07-0.17	5.6-8.4	Low	0.24		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
SmB*, SmC*, SmD*:										
Farmington	0-7	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	7-15	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	15	---	---	---	---	---	---	---		
Rock outcrop**	0-60	---	---	---	---	---	---	---	---	---
SrB*:										
Stockbridge	0-6	5-18	1.00-1.25	0.6-2.0	0.14-0.24	5.1-7.3	Low	0.28	3	2-6
	6-23	5-18	1.40-1.65	0.6-2.0	0.12-0.22	5.6-7.3	Low	0.37		
	23-80	3-18	1.60-1.85	0.06-0.6	0.07-0.17	5.6-8.4	Low	0.24		
Urban land	0-6	---	---	---	---	---	---	---	---	---
Su Sun	0-4	5-18	1.10-1.40	0.6-2.0	0.12-0.21	5.1-6.5	Low	0.28	5	3-15
	4-22	5-18	1.20-1.50	<0.2	0.08-0.15	5.6-7.3	Low	0.20		
	22-80	5-18	1.55-1.75	<0.2	0.06-0.12	6.6-8.4	Low	0.20		
TmD*:										
Taconic	0-3	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24	2	2-6
	3-12	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24		
	12	---	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	Low	0.24		
Macomber	0-4	10-27	1.10-1.40	0.6-2.0	0.10-0.17	4.5-5.5	Low	0.24	3	2-6
	4-24	10-27	1.20-1.50	0.6-2.0	0.04-0.11	4.5-5.5	Low	0.24		
	24	---	---	---	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
SrB*:										
Stockbridge	0-6	5-18	1.00-1.25	0.6-2.0	0.14-0.24	5.1-7.3	Low	0.28	3	2-6
	6-23	5-18	1.40-1.65	0.6-2.0	0.12-0.22	5.6-7.3	Low	0.37		
	23-80	3-18	1.60-1.85	0.06-0.6	0.07-0.17	5.6-8.4	Low	0.24		
Urban land	0-6	---	---	---	---	---	---	---	---	---
Su Sun	0-4	5-18	1.10-1.40	0.6-2.0	0.12-0.21	5.1-6.5	Low	0.28	5	3-15
	4-22	5-18	1.20-1.50	<0.2	0.08-0.15	5.6-7.3	Low	0.20		
	22-80	5-18	1.55-1.75	<0.2	0.06-0.12	6.6-8.4	Low	0.20		
TmD*:										
Taconic	0-3	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24	2	2-6
	3-12	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24		
	12	---	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	Low	0.24		
Macomber	0-4	10-27	1.10-1.40	0.6-2.0	0.10-0.17	4.5-5.5	Low	0.24	3	2-6
	4-24	10-27	1.20-1.50	0.6-2.0	0.04-0.11	4.5-5.5	Low	0.24		
	24	---	---	---	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
TrE*, TrF*:										
Taconic	0-3	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24	2	2-6
	3-12	10-27	1.10-1.40	0.6-6.0	0.10-0.17	4.5-5.5	Low	0.24		
	12	---	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	Low	0.24		

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
TrE*, TrF*:										
Rock outcrop	0-60	---	---	---	---	---	-------------	----	---	---
Ud* Udorthents	0-4	5-35	1.20-1.80	0.06-20	0.06-0.15	4.5-7.3	Low	0.37	3	0-5
	4-70	5-35	1.30-1.90	0.06-6.0	0.04-0.13	4.5-8.4	Low	0.32		
Ue* Udorthents	0-4	5-35	1.10-1.80	0.6-20	0.07-0.16	4.5-7.3	Low	0.37	3	0-8
	4-72	5-35	1.20-2.00	0.02-6.0	0.04-0.14	4.5-8.4	Low	0.32		
UnB Unadilla	0-9	2-18	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low	0.49	3	2-7
	9-70	1-18	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low	0.64		
Ur* Urban land	0-6	---	---	---	---	---	-------------	----	---	---
We Wappinger	0-9	5-18	1.15-1.40	0.6-2.0	0.14-0.21	5.1-6.0	Low	0.49	3	2-6
	9-33	5-18	1.15-1.45	0.6-2.0	0.11-0.17	5.1-7.3	Low	0.49		
	33-37	5-18	1.15-1.45	2.0-20	0.11-0.17	5.6-7.3	Low	0.32		
	37-72	1-8	1.25-1.55	2.0-20	0.01-0.11	5.6-7.3	Low	0.17		
Wy Wayland	0-9	15-35	1.05-1.40	0.2-2.0	0.17-0.22	5.1-7.8	Low	0.43	5	3-6
	9-80	18-35	1.10-1.60	0.06-0.2	0.16-0.20	5.1-8.4	Low	0.43		

* See description of the map unit for composition and behavior characteristics of the map unit.
** This unit contains rock outcrop that covers 0.1 to 2 percent of the unit.
*** This unit contains rock outcrop that covers 2 to 10 percent of the unit.

Table 17.—Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness		Uncoated steel	Concrete
					Ft			In				
BeB, BeC, BeD, BeE: Bernardston	C	None	---	---	1.5-2.0	Perched	Feb-Apr	>60	---	Moderate	Low	High.
BgB*:												
Bernardston	C	None	---	---	1.5-2.0	Perched	Feb-Apr	>60	---	Moderate	Low	High.
Urban land	-	None	---	---	>2.0	---	---	>10	---	---	---	---
Ca: Canandaigua	D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High	Low.
Cc: Carlisle	A/D	None	---	---	+.5-1.0	Apparent	Sep-Jun	>60	---	High	High	Low.
ChB, ChC, ChD, ChE, ClC, ClD, ClE: Charlton	B	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
CrB*, CrC*, CrD*, CrE*:												
Charlton	B	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Chatfield	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
Rock outcrop**	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
CtB*, CtC*, CtD*:												
Chatfield	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
Hollis	C/D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Rock outcrop**	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
CuA, CuB, CuC, CuD, CuE: Copake	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
CwA, CwB: Copake	B	Rare	---	---	3.0-6.0	Apparent	Mar-May	>60	---	Moderate	Low	Moderate.
CxB*:												
Copake	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Urban land	-	None	---	---	>2.0	---	---	>10	---	---	---	---
DuB, DuC, DuD: Dutchess	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
DwB*, DwC*, DwD*:												
Dutchess	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Cardigan	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
Rock outcrop**	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
DxB*, DxC*:												
Dutchess	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Cardigan	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
Urban land	-	None	---	---	>2.0	---	---	>10	---	---	---	---
Rock outcrop**	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
FcB*, FcC*, FcD*:												
Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Galway	B	None	---	---	1.5-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Low	Low.
Rock outcrop***	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
FeE*:												
Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
Ff*:												
Fluvaquents	D	Frequent	Long.	Sep-Jul	+.5-1.5	Apparent	Oct-Jun	>60	---	High	High	High.
Udifluvents	B	Frequent	Brief.	Oct-Jun	2.0-6.0	Apparent	Nov-May	>60	---	Moderate	High	High.
Fr Fredon	C	Rare	---	---	0.5-1.5	Apparent	Oct-Jun	>60	---	High	Low	Low.
GfB*, GfC*, GfD*:												
Galway	B	None	---	---	1.5-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Low	Low.
Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
GlB*, GlC*:												
Galway	B	None	---	---	1.5-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Low	Low.
Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Urban land	-	None	---	---	>2.0	---	---	>10	---	---	---	---
GsA, GsB, GsC Georgia	C	None	---	---	1.5-3.0	Perched	Nov-May	>60	---	Moderate	Moderate	Moderate.

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
Ha---------------- Halsey	C/D	Rare-----	---	---	0-0.5	Apparent	Sep-Jun	>60	---	High-----	High----	Low.
HeA, HeB---------- Haven	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Low-----	High.
Hf*:												
Haven-----------	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Low-----	High.
Urban land------	-	None-----	---	---	>2.0	---	---	>10	---	---	---	---
HoC*, HoD*, HoE*, HoF*:												
Hollis---------	C/D	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
Chatfield------	B	None-----	---	---	>6.0	---	---	20-40	Hard	Moderate	Low-----	Moderate.
Rock outcrop---	D	None-----	---	---	>6.0	---	---	0	Hard	---	---	---
HsA, HsB, HsC, HsD, HsE-------- Hoosic	A	None-----	---	---	>6.0	---	---	>60	---	Low------	Low-----	High.
HtA, HtB--------- Hoosic	A	Rare-----	---	---	3.0-6.0	Apparent	Mar-Apr	>60	---	Low------	Low-----	High.
HuA*, HuB*:												
Hoosic----------	A	None-----	---	---	>6.0	---	---	>60	---	Low------	Low-----	High.
Urban land------	-	None-----	---	---	>2.0	---	---	>10	---	---	---	---
HvB*, HvC*, HvD*, HvE*:												
Hudson---------	C	None-----	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High-----	High----	Low.
Vergennes------	C	None-----	---	---	1.0-3.0	Apparent	Dec-May	>60	---	Moderate	High----	Moderate.
Hy*:												
Hydraquents-----	D	None-----	---	---	0-2.0	Apparent	Oct-Jun	>60	---	High-----	High----	High.
Medisaprists----	A/D	None-----	---	---	0-+1.	Apparent	Oct-Jun	>60	---	High-----	High----	Low.
Kn*:												
Kingsbury-------	D	None-----	---	---	0.5-1.5	Perched	Dec-May	>60	---	High-----	High----	Moderate.
Rhinebeck-------	D	None-----	---	---	0.5-1.5	Perched	Jan-May	>60	---	High-----	High----	Low.
KrA, KrB, KrC, KrD------------- Knickerbocker	A	None-----	---	---	>6.0	---	---	>60	---	Low------	Low-----	Moderate.
KuA*, KuB*:												
Knickerbocker---	A	None-----	---	---	>6.0	---	---	>60	---	Low------	Low-----	Moderate.
Urban land------	-	None-----	---	---	>2.0	---	---	>10	---	---	---	---

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
Ln: Linlithgo	B	Frequent	Brief	Nov-May	0.5-1.5	Apparent	Jan-May	>60	---	High	Moderate	Moderate.
Lv: Livingston	D	None	---	---	0-1.0	Apparent	Sep-Jul	>60	---	High	High	Moderate.
McC*:												
Macomber	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
Taconic	C/D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Rock outcrop***	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
MnA, MnB: Massena	C	None	---	---	1.0-1.5	Apparent	Nov-May	>60	---	High	Moderate	Moderate.
NwB*:												
Nassu	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Cardigan	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
Rock outcrop***	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
NwC*, NwD*:												
Nassau	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Cardigan	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
Rock outcrop***	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
NxE*, NxF*:												
Nassau	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
Pc: Palms, maat<50	A/D	Occas-ional	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High	Moderate.
Pg: Pawling	B	Frequent	Brief	Nov-May	1.5-2.0	Apparent	Feb-Apr	>60	---	High	Low	Low.
Ps*: Pits, gravel	A	None	---	---	>6.0	---	---	>60	---	---	---	---
Pu*: Pits, quarry	-	None	---	---	>6.0	---	---	0	Hard	---	---	---
PwB, PwC: Pittstown	C	None	---	---	1.5-3.0	Perched	Nov-Apr	>60	---	Moderate	Moderate	High.
PzA, PzB: Punsit	C	None	---	---	0.5-1.5	Perched	Feb-Apr	>60	---	High	Moderate	Moderate.
Ra: Raynham	C	None	---	---	0.5-2.0	Apparent	Nov-May	>60	---	High	High	Moderate.
Sc: Scio	B	None	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High	Moderate	Moderate.

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro- logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard- ness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
SkB, SkC, SkD, SkE-------------- Stockbridge	C	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
SmB*, SmC*, SmD*:												
Stockbridge-----	C	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Farmington------	C	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	Moderate.
Rock outcrop**--	D	None-----	---	---	>6.0	---	---	0	Hard	---	---	---
SrB*:												
Stockbridge-----	C	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Urban land------	-	None-----	---	---	>2.0	---	---	>10	---	---	---	---
Su--------------- Sun	D	None-----	---	---	+1-0.5	Apparent	Nov-Apr	>60	---	High-----	High----	Moderate.
TmD*:												
Taconic---------	C/D	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
Macomber--------	C	None-----	---	---	>6.0	---	---	20-40	Hard	Moderate	Low-----	High.
Rock outcrop----	D	None-----	---	---	>6.0	---	---	0	Hard	---	---	---
TrE*, TrF*:												
Taconic---------	C/D	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
Rock outcrop----	D	None-----	---	---	>6.0	---	---	0	Hard	---	---	---
Ud*-------------- Udorthents	A/D	None-----	---	---	>3.0	---	Nov-Jun	>60	---	Moderate	Moderate	Moderate.
Ue*-------------- Udorthents	A/C	None-----	---	---	1.0-3.0	Apparent	Oct-Jul	>60	---	Moderate	Moderate	Moderate.
UnB-------------- Unadilla	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Low-----	Moderate.
Ur*-------------- Urban land	-	None-----	---	---	>2.0	---	---	>10	---	---	---	---
We--------------- Wappinger	B	Occas- ional	Brief---	Nov-May	3.0-5.0	Apparent	Feb-Apr	>60	---	Moderate	Low-----	Low.
Wy--------------- Wayland	C/D	Frequent-	Brief to long.	Nov-Jun	+.5-1.0	Apparent	Nov-Jun	>60	---	High-----	High----	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.
** The unit contains rock outcrop that covers 0.1 to 2 percent of the surface.
*** This unit contains rock outcrop that covers 2 to 10 percent of the surface.

Table 18.—The Relationship Between Soils, their Parent Material, Landscape Position, and Drainage

Soil Characteristics and Parent Materials	Somewhat Excessively Drained	Well Drained	Moderately Well Drained	Somewhat Poorly Drained	Poorly Drained	Very Poorly Drained
	Soils on Outwash Terraces, Plains, and Alluvial Fans					
Very deep, medium and moderately coarse textured brownish soils, formed in glaciofluvial material over stratified sand and gravel.	Hoosic			Fredon	Halsey	Halsey
Very deep, moderately coarse and coarse textured, brownish soils formed in glaciofluvial material over stratified sand and gravel.	Knickerbocker					
Very deep, medium textured, brownish soils, formed in glaciofluvial material over stratified sand and gravel.		Haven				
Very deep, medium and moderately coarse textured brownish soils, formed in glaciofluvial material over stratified sand and gravel, and are mildly alkaline.		Copake				
	Soils on Lacustrine Plains					
Very deep, very fine textured, brownish soils, formed in lacustrine sediments, having an accumulation of clay in the subsoil.			Vergennes	Kingsbury		Livingston
Very deep, fine textured, brownish soils, formed in lacustrine sediments, having an accumulation of clay in the subsoil.			Hudson	Rhinebeck	Canandaigua	Canadaigua
	Soils on Upland Till Plains					
Very deep, medium textured soils, formed in glacial till, and having a firm substratum.		Bernardston	Pittstown	Punsit	Sun	Sun
Very deep, medium textured soils, formed in glacial till high in limestone rock fragments, and are mildly alkaline in the substratum.		Stockbridge	Georgia	Massena	Sun	Sun
Very deep, medium textured soils, formed in glacial till high in shale and slate rock fragments.		Dutchess				
Very deep, moderately coarse and medium textured soils, formed in glacial till high in schist, gneiss or granite rock fragments.		Charlton				

Table 18.—The Relationship Between Soils, their Parent Material, Landscape Position, and Drainage—Continued

Soil Characteristics and Parent Materials	Somewhat Excessively Drained	Well Drained	Moderately Well Drained	Somewhat Poorly Drained	Poorly Drained	Very Poorly Drained
	Soils on Upland Till Plains					
Shallow, medium textured soils, formed in glacial till over shale bedrock.	Nassau					
Moderately deep, medium textured soils, formed in glacial till over shale bedrock.		Cardigan				
Shallow, medium and moderately coarse textured soils, formed in glacial till over schist, granite or gneiss bedrock.	Hollis	Hollis				
Moderately deep medium and moderately coarse textured soils, formed in glacial till over schist, granite or gneiss bedrock.	Chatfield	Chatfield				
Shallow, medium and moderately coarse textured soils, formed in glacial till over limestone bedrock.	Farmington	Farmington				
Moderately deep, medium and moderately coarse textured soils, formed in glacial till over limestone bedrock.		Galway	Galway			
Shallow, medium textured soils formed in glacial till over slate schist, or phyllite bedrock, and having a mean annual temperature of less than 47 degrees F.	Taconic					
Moderately deep, medium textured soils, formed in glacial till over slate, schist, or phyllite bedrock, and having a mean annual temperature of less than 47 degrees F.		Macomber				
	Soils on Floodplains					
Very deep, medium and moderately coarse textured soils, formed in alluvial sediments over sand and gravel.		Wappinger	Pawling	Linlithgo		
Very deep, medium and moderately fine textured soils, formed in alluvial sediments.					Wayland	Wayland

Table 18.—The Relationship Between Soils, their Parent Material, Landscape Position, and Drainage—Continued

Soil Characteristics and Parent Materials	Somewhat Excessively Drained	Well Drained	Moderately Well Drained	Somewhat Poorly Drained	Poorly Drained	Very Poorly Drained
	Soils on Floodplains					
Very deep, moderately coarse to moderately fine textured soils, formed in alluvial sediments.	Udifluvents	Udifluvents	Udifluvents	Fluvaquents	Fluvaquents	Fluvaquents
	Soils in Swamps and Bogs					
Very deep soils formed in well decomposed organic material, more than 51 inches thick.						Carlisle
Very deep soils formed in well de- composed organic material, 16 to 51 inches thick, over moderately coarse to fine textured mineral matter.						Palms
Very deep soils formed in well decomposed organic material more than 16 inches thick.						Medisaprist
Very deep soils formed in moderately fine to moderately coarse textured mineral matter.						Hydraquents
	Soils on Till Plains, Outwash Terraces, and Lacustrine Plains, Altered by Cultural Activities					
Very deep to shallow, coarse to fine textured soils, formed in mixed soil material.	Udorthents	Udorthents	Udorthents	Udorthents	Udorthents	Udorthents

Table 19.—Classification of the Soils

Soil name	Family or higher taxonomic class
Bernardston	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Canandaigua	Fine-silty, mixed, nonacid, mesic Mollic Haplaquepts
Cardigan	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Carlisle	Euic, mesic Typic Medisaprists
Charlton	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Chatfield	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Copake	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Dystric Eutrochrepts
Dutchess	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Farmington	Loamy, mixed, mesic Lithic Eutrochrepts
Fluvaquents	Fluvaquents
Fredon	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Aeric Haplaquepts
Galway	Coarse-loamy, mixed, mesic Typic Eutrochrepts
Georgia	Coarse-loamy, mixed, mesic Aquic Dystric Eutrochrepts
Halsey	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Mollic Haplaquepts
Haven	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hollis	Loamy, mixed, mesic Lithic Dystrochrepts
Hoosic	Sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hudson	Fine, illitic, mesic Glossaquic Hapludalfs
Hydraquents	Aquents
Kingsbury	Very-fine, illitic, mesic Aeric Ochraqualfs
Knickerbocker	Sandy, mixed, mesic Typic Dystrochrepts
Linlithgo	Fine-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Aeric Fluvaquents
Livingston	Very-fine, illitic, nonacid, mesic Mollic Haplaquepts
Macomber	Loamy-skeletal, mixed, frigid Typic Dystrochrepts
Massena	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Medisaprists	Saprists
Nassau	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Palms, maat<50	Loamy, mixed, euic, mesic Terric Medisaprists
Pawling	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Fluvaquentic Eutrochrepts
Pits, gravel.	
Pits, quarry.	
Pittstown	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Punsit	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Raynham	Coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts
Rhinebeck	Fine, illitic, mesic Aeric Ochraqualfs
Rock outcrop.	
Scio	Coarse-silty, mixed, mesic Aquic Dystrochrepts
Stockbridge	Coarse-loamy, mixed, mesic Dystric Eutrochrepts
Sun	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Taconic	Loamy-skeletal, mixed, frigid Lithic Dystrochrepts
Udifluvents	Udifluvents
Udorthents	Udorthents
Unadilla	Coarse-silty, mixed, mesic Typic Dystrochrepts
Vergennes	Very-fine, illitic, mesic Glossaquic Hapludalfs
Wappinger	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Dystric Fluventic Eutrochrepts
Wayland	Fine-silty, mixed, nonacid, mesic Mollic Fluvaquents

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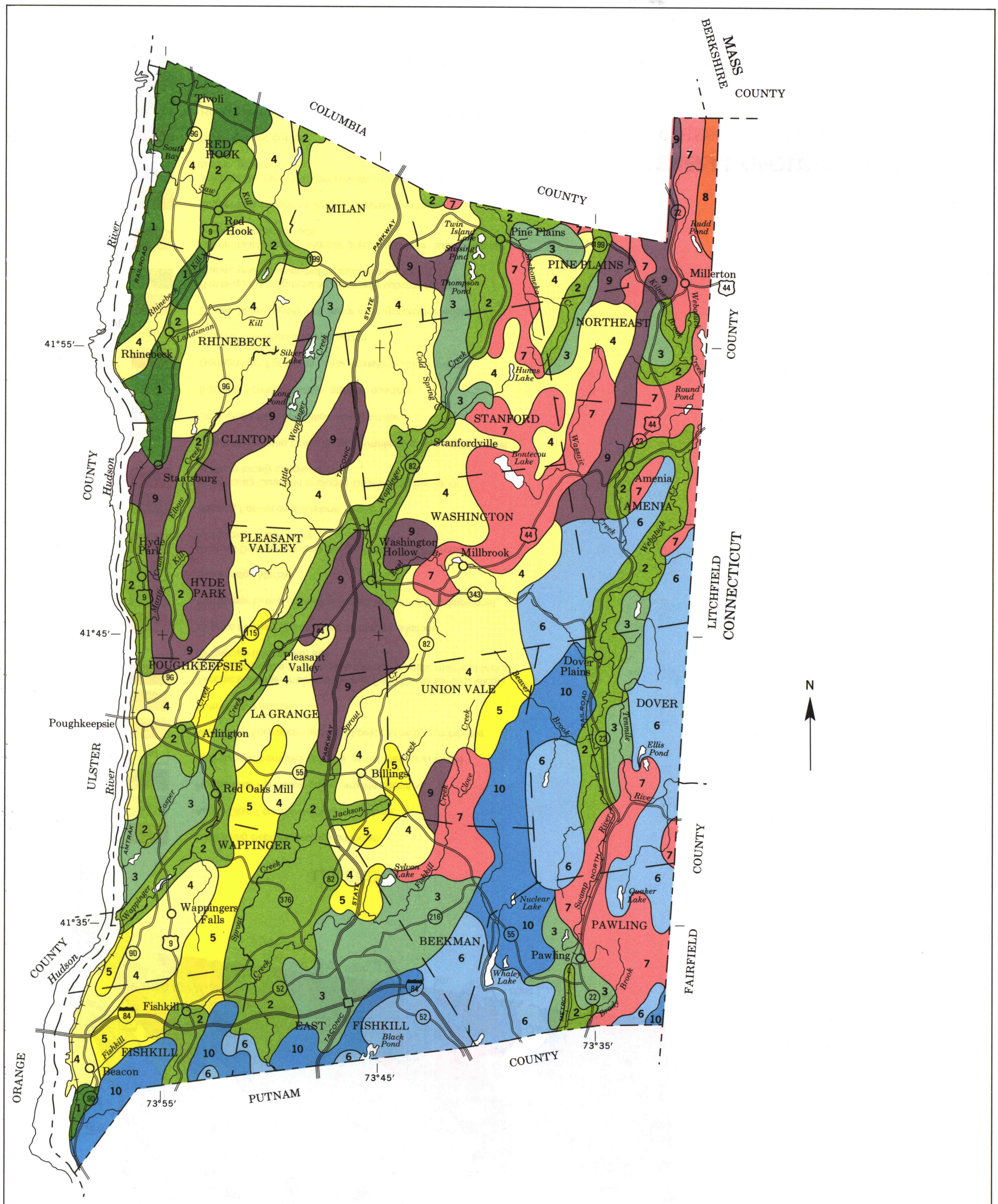


SOIL LEGEND*

- 1 Hudson-Vergennes-Raynham
- 2 Hoosic-Wayland-Copake
- 3 Farmington-Galway-Stockbridge
- 4 Cardigan-Dutchess-Nassau
- 5 Bernardston-Pittstown
- 6 Charlton-Chatfield-Hollis
- 7 Stockbridge-Georgia
- 8 Taconic-Rock Outcrop-Macomber
- 9 Nassau-Rock Outcrop-Cardigan
- 10 Hollis-Chatfield-Rock Outcrop

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1999

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

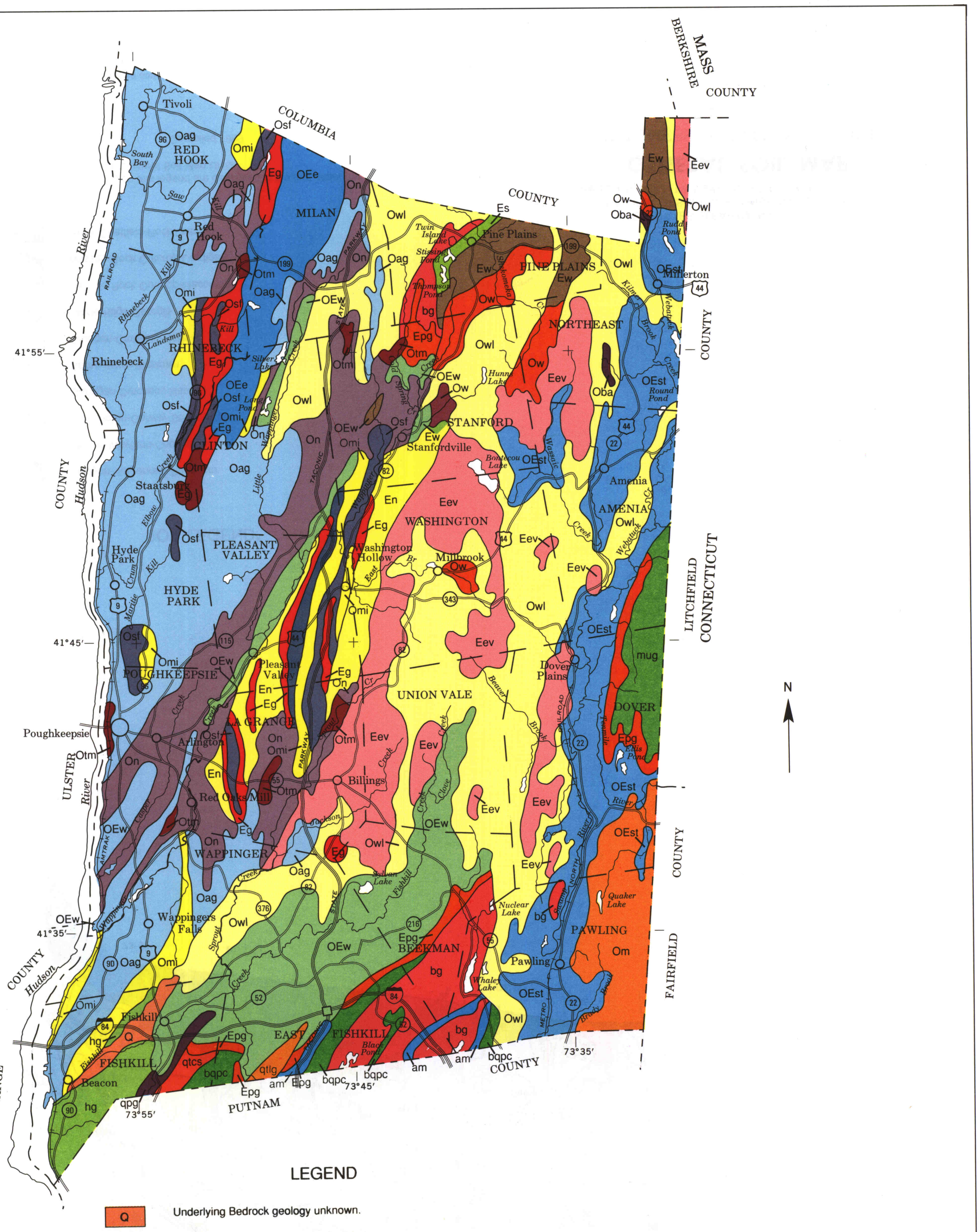
GENERAL SOIL MAP

DUTCHESS COUNTY, NEW YORK

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km



LEGEND

Q	Underlying Bedrock geology unknown.
Oag	Austin Glen Formation-graywacke, shale.
On	Normanskill Formation-shale, argillite, siltstone.
Owl	Walloomsac Formation-phyllite, schist, meta-graywacke
Om	Manhattan Formation, undivided-pelitic schists, amphibolite.
Oba	Balmville Limestone.
Otm	Taconic Malange-chaotic mixture of Early Cambrain thru Middle Ordovician pebble-to block-size clasts in a pelitic matrix of Middle Ordovician (Barneveld) age.
Ow	Copake Formation-limestone, dolostone, siltstone.
OEw	Wappinger Group (including Fishkill limestone and dolostone).
OEst	Stockbridge Marble.
Ew	Briarcliff Dolostone-locally cherty, Pine Plains Formation -dolostone, shale, oolite.
Es	Stissing Formation-dolostone, shale.
Epg	Poughquag Quartzite (includes local Dalton Formation at base)-locally conglomeratic.
Omi	Mount Merino and Indian River Formations-shale, argillite, chert.
Osf	Stuyvesant Falls Formation-shale, siltstone.
OEe	Elizaville Formation-shale, argillite, quartzite.
Eg	Germantown Formation-shale, limestone, conglomerate.
En	Nassau Formation-shale, quartzite.
Eev	Everett Schist-locally with minor meta-graywacke lenses.
bqpc	Biotite-quartz-plagioclase gneiss with subordinate biotite granitic gneiss, amphibolite, calcsilicate rock.
qtcs	Garnet-biotite-quartz-feldspar gneiss, quartzite, quartz-feldspar gneiss, calcsilicate rock.
qtlg	Garnet-bearing gneiss and interlayered quartzite.
am	Amphibolite, pyroxenic amphibolite, hornblende gneiss, commonly biotitic, garnetiferous.
bg	Biotite granitic gneiss
hg	Hornblende granite and granitic gneiss, with subordinate leucogranite.
qpg	Quartz plagioclase gneiss, may contain pyroxenes hornblende, biotite.
mug	Interlayered metasedimentary rock and granitic gneiss.

GENERAL GEOLOGY MAP

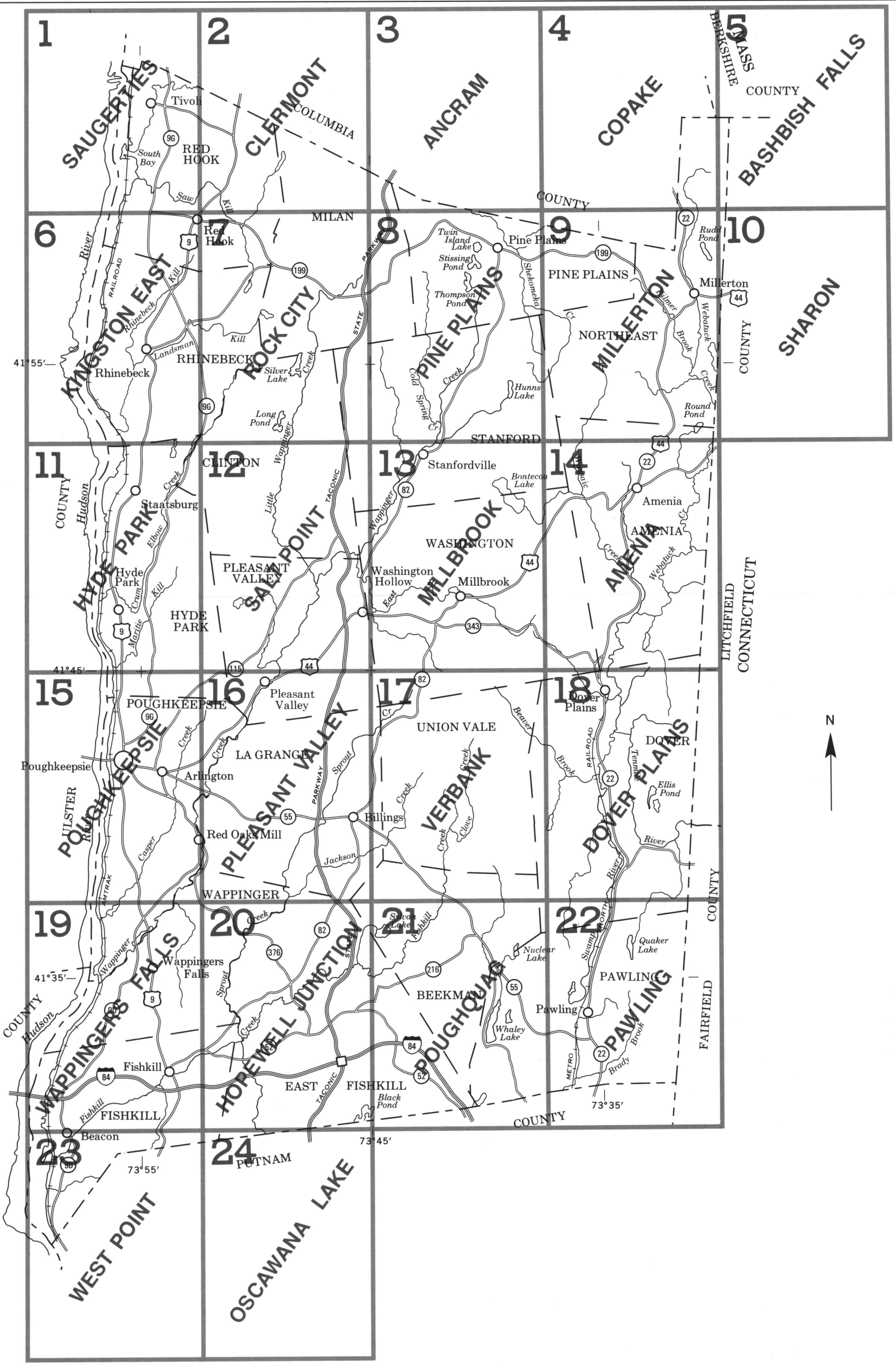
DUTCHESS COUNTY, NEW YORK

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

Compiled 1992



INDEX TO MAP SHEETS

DUTCHESS COUNTY, NEW YORK

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

SOIL LEGEND

Map symbols consist of a combination of two or three letters. The first two letters represent the soil. The capital letter following these letters is the slope class. Symbols without a slope letter are for nearly level soils when represented by one map unit, miscellaneous areas, and soils named at categories above the series level. The legend is in alphabetical order.

SYMBOL	NAME
BeB	Bernardston silt loam, 3 to 8 percent slopes
BeC	Bernardston silt loam, 8 to 15 percent slopes
BeD	Bernardston silt loam, 15 to 25 percent slopes
BeE	Bernardston silt loam, 25 to 45 percent slopes
BgB	Bernardston-Urban land complex, 3 to 8 percent slopes
Ca	Canandaigua silt loam, neutral substratum
Cc	Carlisle muck
ChB	Charlton loam, 3 to 8 percent slopes
ChC	Charlton loam, 8 to 15 percent slopes
ChD	Charlton loam, 15 to 25 percent slopes
ChE	Charlton loam, 25 to 45 percent slopes
ClC	Charlton loam, 8 to 15 percent slopes, very stony
ClD	Charlton loam, 15 to 25 percent slopes, very stony
ClE	Charlton loam, 25 to 45 percent slopes, very stony
CrB	Charlton-Chatfield complex, undulating, rocky
CrC	Charlton-Chatfield complex, rolling, rocky
CrD	Charlton-Chatfield complex, hilly, rocky
CrE	Charlton-Chatfield complex, steep, rocky
CtB	Chatfield-Hollis complex, undulating, very rocky
CtC	Chatfield-Hollis complex, rolling, very rocky
CtD	Chatfield-Hollis complex, hilly, very rocky
CuA	Copake gravelly silt loam, nearly level
CuB	Copake gravelly silt loam, undulating
CuC	Copake gravelly silt loam, rolling
CuD	Copake gravelly silt loam, hilly
CuE	Copake gravelly silt loam, 25 to 45 percent slopes
CwA	Copake channery silt loam, fan, 0 to 3 percent slopes
CwB	Copake channery silt loam, fan, 3 to 8 percent slopes
CxB	Copake-Urban land complex, undulating
DuB	Dutchess silt loam, 3 to 8 percent slopes
DuC	Dutchess silt loam, 8 to 15 percent slopes
DuD	Dutchess silt loam, 15 to 25 percent slopes
DwB	Dutchess-Cardigan complex, undulating, rocky
DwC	Dutchess-Cardigan complex, rolling, rocky
DwD	Dutchess-Cardigan complex, hilly, rocky
DxB	Dutchess-Cardigan-Urban land complex, undulating, rocky
DxC	Dutchess-Cardigan-Urban land complex, rolling, rocky
FcB	Farmington-Galway complex, undulating, very rocky
FcC	Farmington-Galway complex, rolling, very rocky
FcD	Farmington-Galway complex, hilly, very rocky
FeE	Farmington-Rock outcrop complex, steep
Ff	Fluvaquents-Udifluvents complex, frequently flooded
Fr	Fredon silt loam
GfB	Galway-Farmington complex, undulating, rocky
GfC	Galway-Farmington complex, rolling, rocky
GfD	Galway-Farmington complex, hilly
GlB	Galway-Farmington-Urban land complex, undulating, rocky
GlC	Galway-Farmington-Urban land complex, rolling, rocky
GsA	Georgia silt loam, 0 to 3 percent slopes
GsB	Georgia silt loam, 3 to 8 percent slopes
GsC	Georgia silt loam, 8 to 15 percent slopes
Ha	Halsey mucky silt loam
HeA	Haven loam, nearly level
HeB	Haven loam, undulating
Hf	Haven-Urban land complex
HoC	Hollis-Chatfield-Rock outcrop complex, rolling
HoD	Hollis-Chatfield-Rock outcrop complex, hilly
HoE	Hollis-Chatfield-Rock outcrop complex, steep
HoF	Hollis-Chatfield-Rock outcrop complex, very steep
HsA	Hoosic gravelly loam, nearly level
HsB	Hoosic gravelly loam, undulating
HsC	Hoosic gravelly loam, rolling
HsD	Hoosic gravelly loam, hilly
HsE	Hoosic gravelly loam, 25 to 45 percent slopes
HtA	Hoosic channery loam, fan, 0 to 3 percent slopes
HtB	Hoosic channery loam, fan, 3 to 8 percent slopes
HuA	Hoosic-Urban land complex, nearly level
HuB	Hoosic-Urban land complex, undulating
HvB	Hudson and Vergennes soils, 3 to 8 percent slopes
HvC	Hudson and Vergennes soils, 8 to 15 percent slopes
HvD	Hudson and Vergennes soils, hilly
HvE	Hudson and Vergennes soils, steep
Hy	Hydraquents and Medisaprists soils, ponded
Kn	Kingsbury and Rhinebeck soils
KrA	Knickerbocker fine sandy loam, nearly level
KrB	Knickerbocker fine sandy loam, undulating
KrC	Knickerbocker fine sandy loam, rolling
KrD	Knickerbocker fine sandy loam, hilly
KuA	Knickerbocker-Urban land complex, nearly level
KuB	Knickerbocker-Urban land complex, undulating
Ln	Linlithgo silt loam
Lv	Livingston silty clay loam
McC	Macomber-Taconic complex, rolling, very rocky
MnA	Massena silt loam, 0 to 3 percent slopes
MnB	Massena silt loam, 3 to 8 percent slopes
NwB	Nassau-Cardigan complex, undulating, very rocky
NwC	Nassau-Cardigan complex, rolling, very rocky
NwD	Nassau-Cardigan complex, hilly, very rocky
NxE	Nassau-Rock outcrop complex, steep
NxF	Nassau-Rock outcrop complex, very steep
Pc	Palms muck
Pg	Pawling silt loam
Ps	Pits, gravel
Pu	Pits, quarry
PwB	Pittstown silt loam, 3 to 8 percent slopes
PwC	Pittstown silt loam, 8 to 15 percent slopes
PzA	Punsit silt loam, 0 to 3 percent slopes
PzB	Punsit silt loam, 3 to 8 percent slopes
Ra	Raynham silt loam
Sc	Scio silt loam
SkB	Stockbridge silt loam, 3 to 8 percent slopes
SkC	Stockbridge silt loam, 8 to 15 percent slopes
SkD	Stockbridge silt loam, 15 to 25 percent slopes
SkE	Stockbridge silt loam, 25 to 45 percent slopes
SmB	Stockbridge-Farmington complex, undulating, rocky
SmC	Stockbridge-Farmington complex, rolling, rocky
SmD	Stockbridge-Farmington complex, hilly, rocky
SrB	Stockbridge-Urban land complex, 3 to 8 percent slopes
Su	Sun silt loam
TmD	Taconic-Macomber-Rock outcrop complex, hilly
TrE	Taconic-Rock outcrop complex, steep
TrF	Taconic-Rock outcrop complex, very steep
Ud	Udorthents, smoothed
Ue	Udorthents, wet substratum
UnB	Unadilla silt loam, undulating
Ur	Urban land
We	Wappinger loam
Wy	Wayland silt loam
Wz	Water, > 40 acres
W	Water, < 40 acres

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Limit of soil survey (label)
- Field sheet matchline and neatline

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 173
- Federal — 287
- State — 52

RAILROAD

DAMS

- Medium or Small (Named where applicable) — water; w

PITS

- Mine or quarry

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end

LAKES, PONDS AND RESERVOIRS

- Perennial — water

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — DwC Ra

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

MISCELLANEOUS

- Clay spot
- Gravelly spot
- Rock outcrop (includes sandstone and shale)
- Sandy spot
- Stony spot, very stony spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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North American Datum of 1927 NAD27. Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 18. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

QUADRANGLE LOCATION

SAUGERTIES, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 24

1	2	3
4		5
6	7	8

1 KAATERSKILL
2 CEMENTON
3 HUDSON SOUTH
4 WOODSTOCK
5 CLERMONT
6 KINGSTON WEST
7 KINGSTON EAST
8 ROCK CITY

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
CLERMONT QUADRANGLE
SHEET NUMBER 2 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 2

QUADRANGLE LOCATION

CLERMONT, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 24

1	2	3
4		5
6	7	8

1 CEMENTON
2 HUDSON SOUTH
3 CLAVERACK
4 SAUGERTIES
5 ANCRAM
6 KINGSTON EAST
7 ROCK CITY
8 PINE PLAINS

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
ANCRAM QUADRANGLE
SHEET NUMBER 3 OF 24

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NORTH

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 3

QUADRANGLE LOCATION

ANCRAM, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 24

1	2	3
4		5
6	7	8

1 HUDSON SOUTH
2 CLAVERACK
3 HILLSDALE
4 CLERMONT
5 COPAKE
6 ROCK CITY
7 PINE PLAINS
8 MILLERTON

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
COPAKE QUADRANGLE
SHEET NUMBER 4 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 4

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 CLAVERACK
2 HILLSDALE
3 EGREMONT
4 ANCRAM
5 BASH BISH FALLS
6 PINE PLAINS
7 MILLERTON
8 SHARON

INDEX TO ADJOINING 7.5 MAPS

COPAKE, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
BASHBISH FALLS QUADRANGLE
SHEET NUMBER 5 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 5

QUADRANGLE LOCATION

BASHBISH FALLS, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 24

1	2	3	1 HILLSDALE 2 EGREMONT 3 GREAT BARRINGTON
4		5	4 COPAKE 5 ASHLEY 6 MILLERTON
6	7	8	7 SHARON 8 SOUTH CANAAN

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
KINGSTON EAST QUADRANGLE
SHEET NUMBER 6 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 6

QUADRANGLE LOCATION

KINGSTON EAST, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 24

1 WOODSTOCK
2 SAUGERTIES
3 CLERMONT
4 KINGSTON WEST
5 ROCK CITY
6 ROSENDALE
7 HYDE PARK
8 SALT POINT

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
ROCK CITY QUADRANGLE
SHEET NUMBER 7 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 7

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 SAUGERTIES
2 CLERMONT
3 ANCRAM
4 KINGSTON EAST
5 PINE PLAINS
6 HYDE PARK
7 SALT POINT
8 MILLBROOK

INDEX TO ADJOINING 7.5 MAPS

ROCK CITY, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
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DUTCHESS COUNTY, NEW YORK
PINE PLAINS QUADRANGLE
SHEET NUMBER 8 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 8

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 CLERMONT
2 ANCRAM
3 COPAKE
4 ROCK CITY
5 MILLERTON
6 SALT POINT
7 MILLBROOK
8 AMENIA

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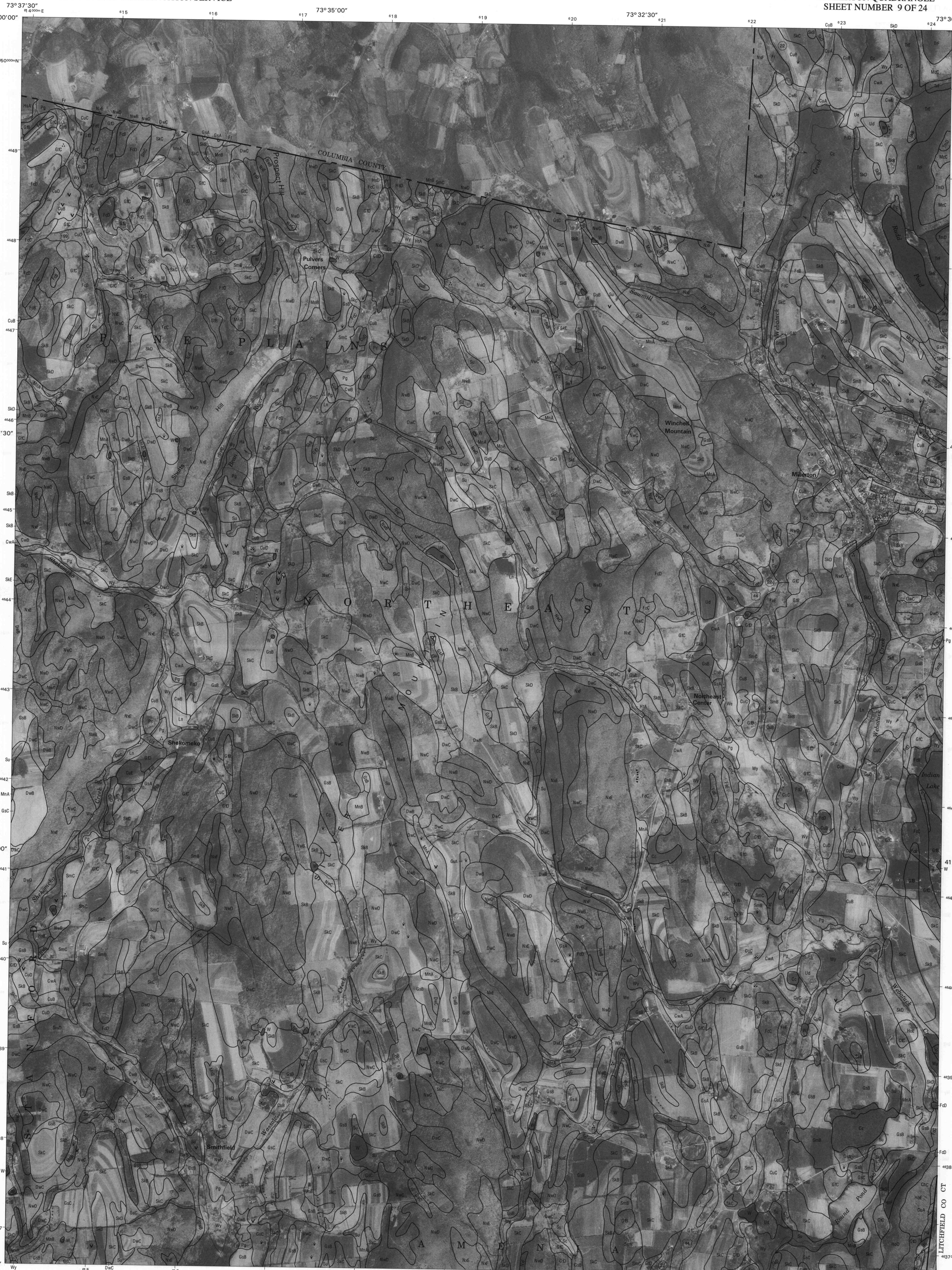
PINE PLAINS, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 9

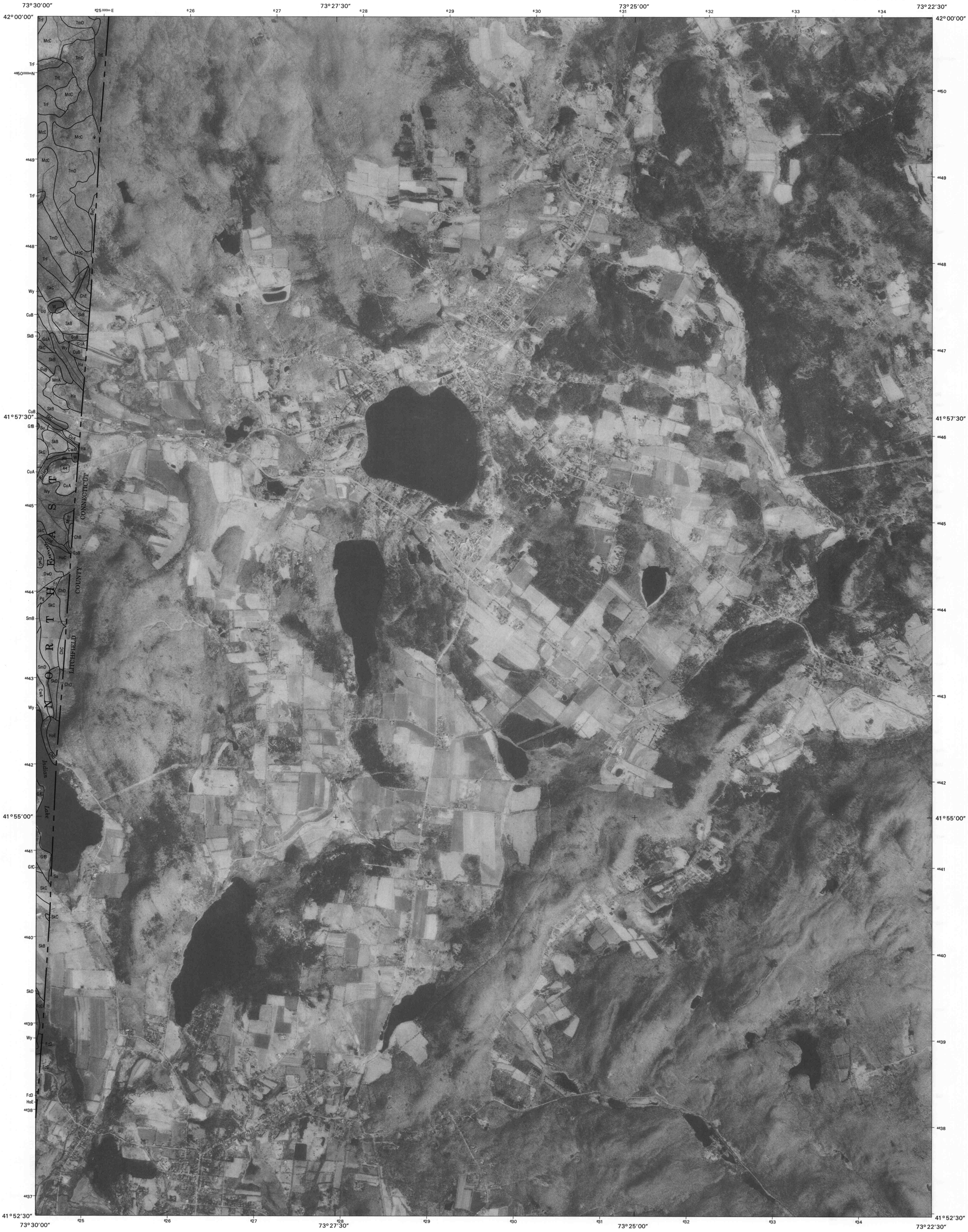
QUADRANGLE LOCATION

MILLERTON, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 24

1	2	3
4		5
6	7	8

1 ANCRAM
2 COPAKE
3 BASHBISH FALLS
4 PINE PLAINS
5 SHARON
6 MILLBROOK
7 AMENIA
8 ELLSWORTH

INDEX TO ADJOINING 7.5 MAPS



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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 10

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 COPAKE
2 BASHBISH FALLS
3 ASHLEY FALLS
4 MILLERTON
5 SOUTH CANAAN
6 AMENIA
7 ELLSWORTH
8 CORNWALL

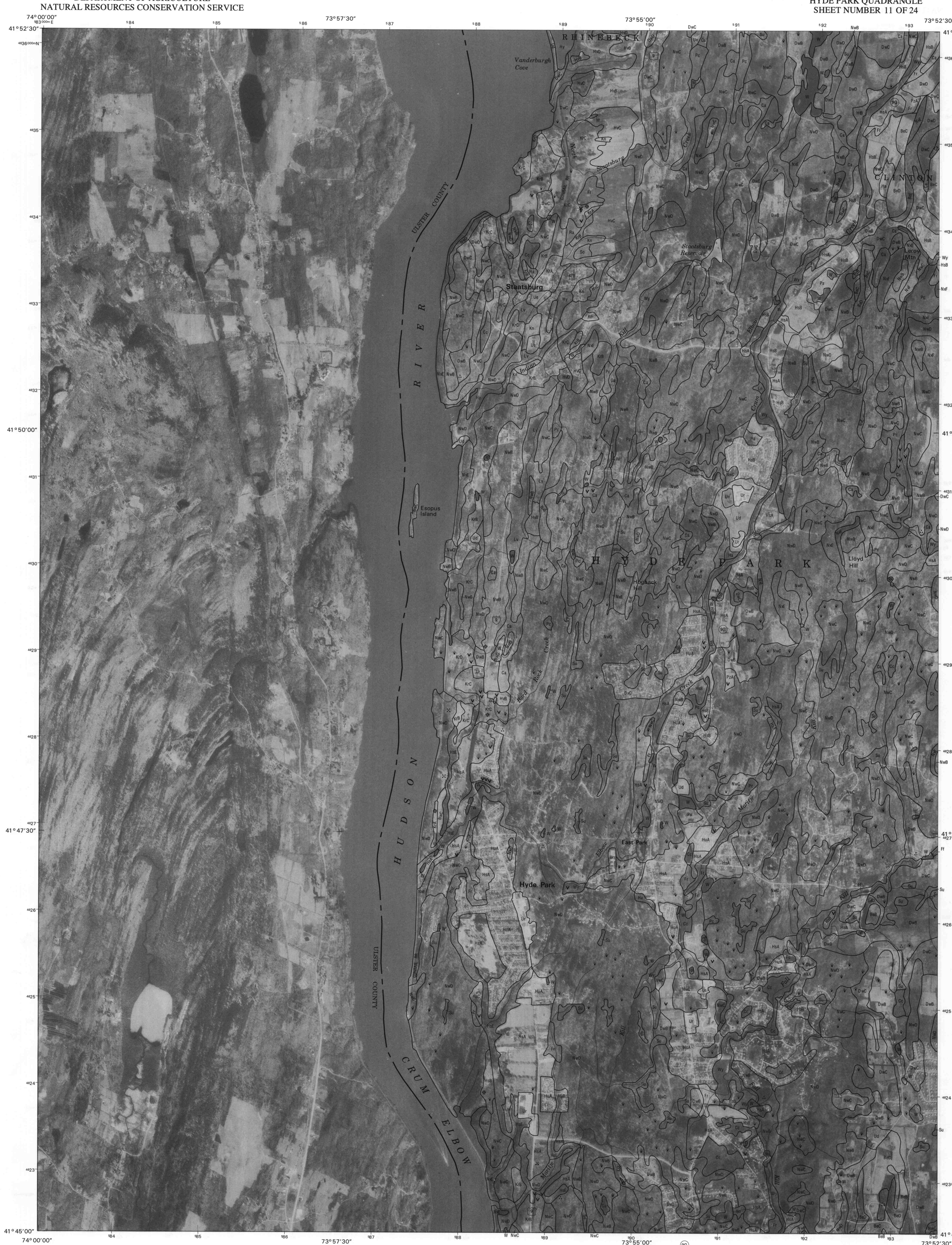
INDEX TO ADJOINING 7.5 MAPS

SHARON, NEW YORK

7.5 MINUTE SERIES
SHEET NUMBER 10 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
HYDE PARK QUADRANGLE
SHEET NUMBER 11 OF 24



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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 11

QUADRANGLE LOCATION

1	2	3	1 KINGSTON WEST 2 KINGSTON EAST 3 ROCK CITY
4		5	4 ROSENDALE 5 SALT POINT
6	7	8	6 CLINTONDALE 7 POUGHKEEPSIE 8 PLEASANT VALLEY

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HYDE PARK, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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North American Datum of 1927 NAD27. Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 18. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 12

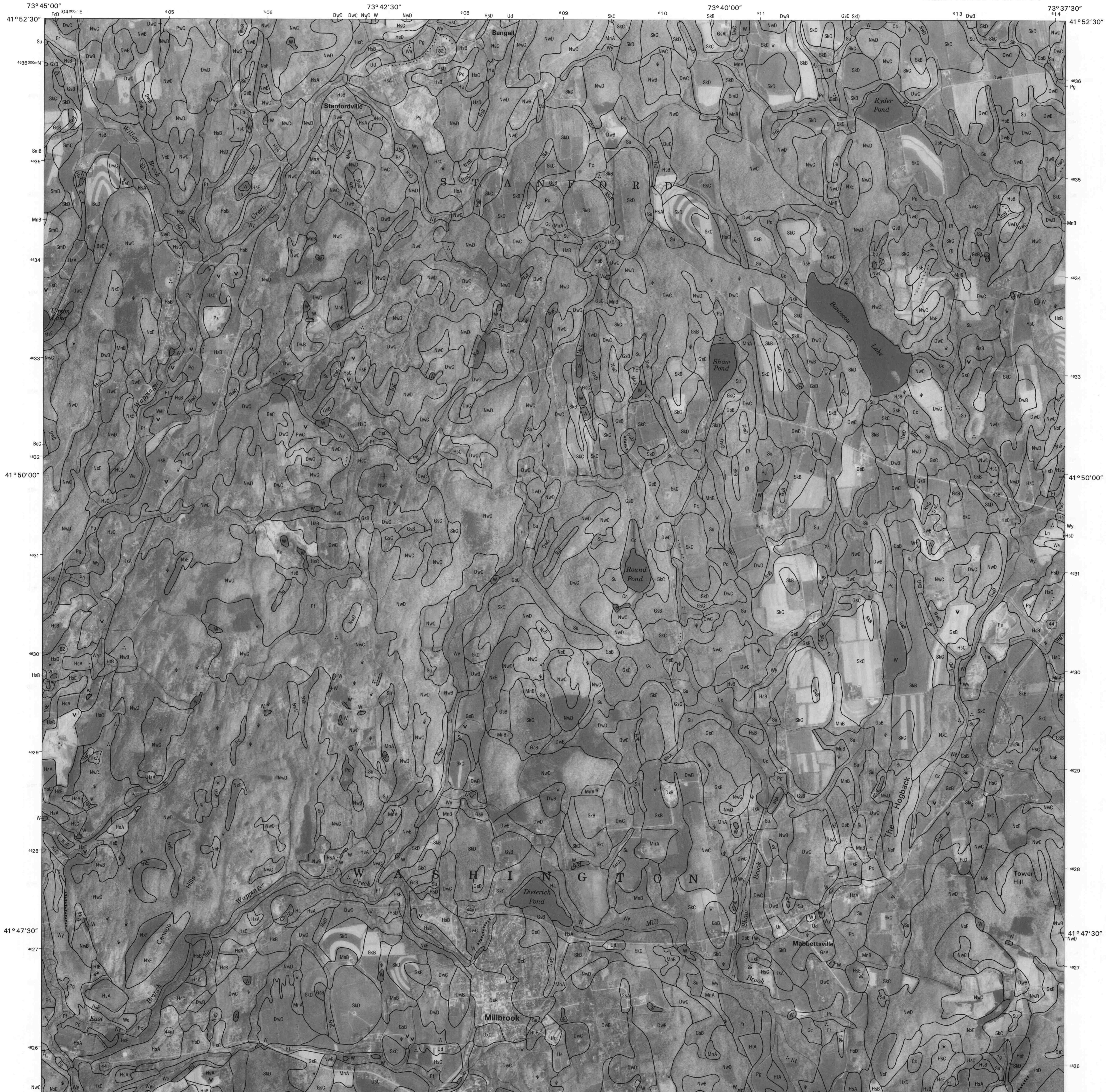
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 KINGSTON EAST
2 ROCK CITY
3 PINE PLAINS
4 HYDE PARK
5 MILLBROOK
6 POUGHKEEPSIE
7 PLEASANT VALLEY
8 VERBANK

INDEX TO ADJOINING 7.5 MAPS

SALT POINT, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 24



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NORTH

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 13

QUADRANGLE LOCATION

MILLBROOK, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 24

1	2	3
4		5
6	7	8

1 ROCK CITY
2 PINE PLAINS
3 MILLERTON
4 SALT POINT
5 AMENIA
6 PLEASANT VALLEY
7 VERBANK
8 DOVER PLAINS

INDEX TO ADJOINING 7.5 MAPS

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SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

DUTCHESS COUNTY, NEW YORK NO. 14

QUADRANGLE LOCATION

AMENIA, NEW YORK

7.5 MINUTE SERIES
SHEET NUMBER 14 OF 24

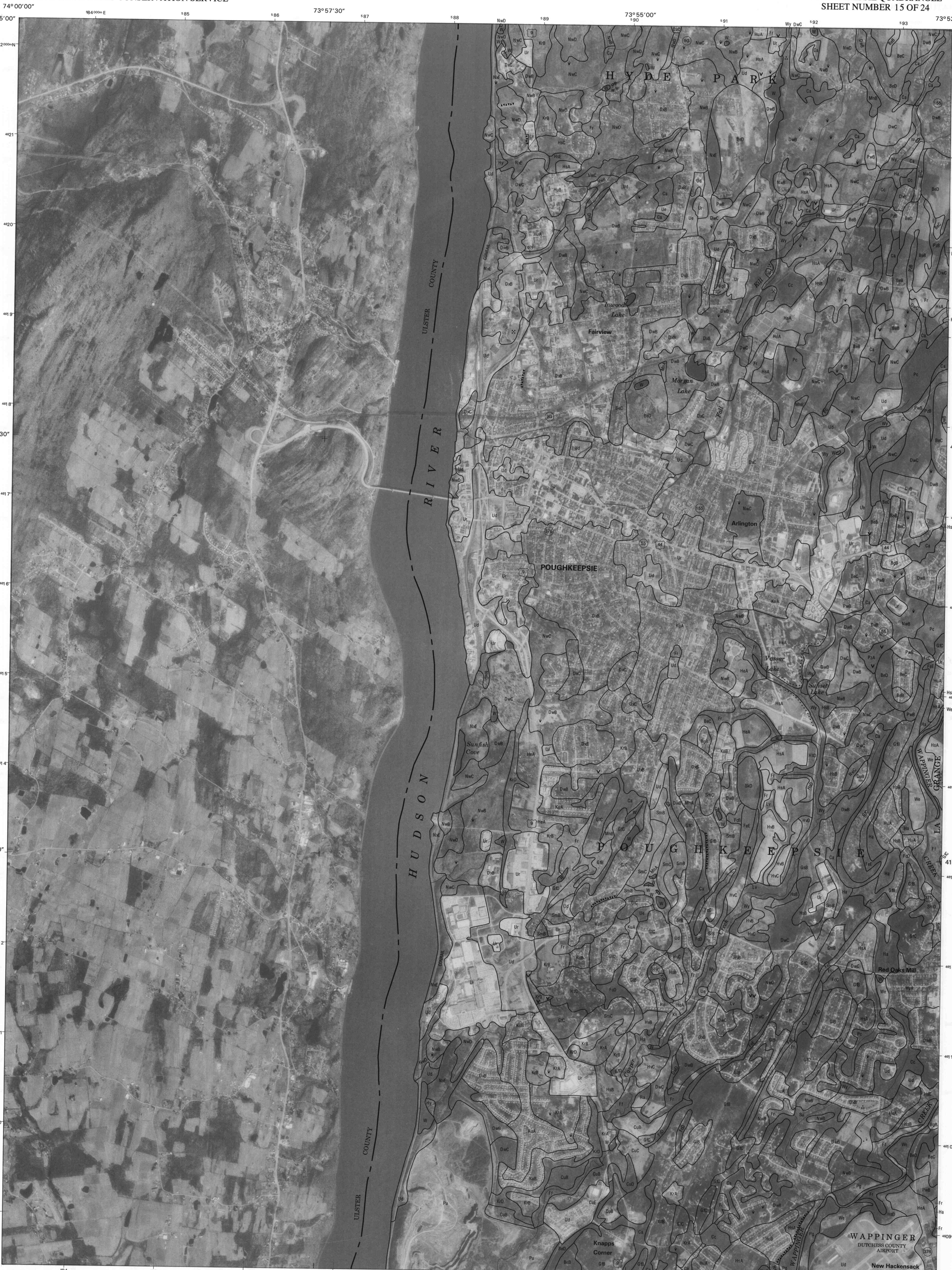
1	2	3
4		5
6	7	8

1 PINE PLAINS
2 MILLERTON
3 SHARON
4 MILLBROOK
5 ELLSWORTH
6 VERBANK
7 DOVER PLAINS
8 KENT

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
POUGHKEEPSIE QUADRANGLE
SHEET NUMBER 15 OF 24



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NORTH

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 15

QUADRANGLE LOCATION

POUGHKEEPSIE, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 24

1	2	3
4		5
6	7	8

1 ROSENDALE
2 HYDE PARK
3 SALT POINT
4 CLINTONDALE
5 PLEASANT VALLEY
6 NEWBURGH
7 WAPPINGERS FALLS
8 HOPEWELL JUNCTION

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
PLEASANT VALLEY QUADRANGLE
SHEET NUMBER 16 OF 24

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1975-85 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 NAD27. Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 18. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 16

QUADRANGLE LOCATION

1	2	3	1 HYDE PARK 2 SALT POINT 3 MILLBROOK
4		5	4 POUGHKEEPSIE 5 VERBANK 6 WAPPINGERS FALLS
6	7	8	7 HOPEWELL JUNCTION 8 POUGHQUAG

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PLEASANT VALLEY, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
VERBANK QUADRANGLE
SHEET NUMBER 17 OF 24

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NORTH

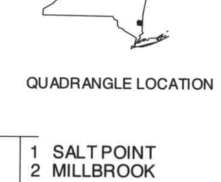
SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 17



QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 SALT POINT
2 MILLBROOK
3 AMENIA
4 PLEASANT VALLEY
5 DOVER PLAINS
6 HOPEWELL JUNCTION
7 POUGHQUAG
8 PAWLING

INDEX TO ADJOINING 7.5 MAPS

VERBANK, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 17 OF 24

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NORTH

SCALE 1:24000

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 18

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 MILBROOK
2 AMENIA
3 ELLSWORTH
4 VERBANK
5 KENT
6 POUGHQUAG
7 PAWLING
8 NEW MILFORD

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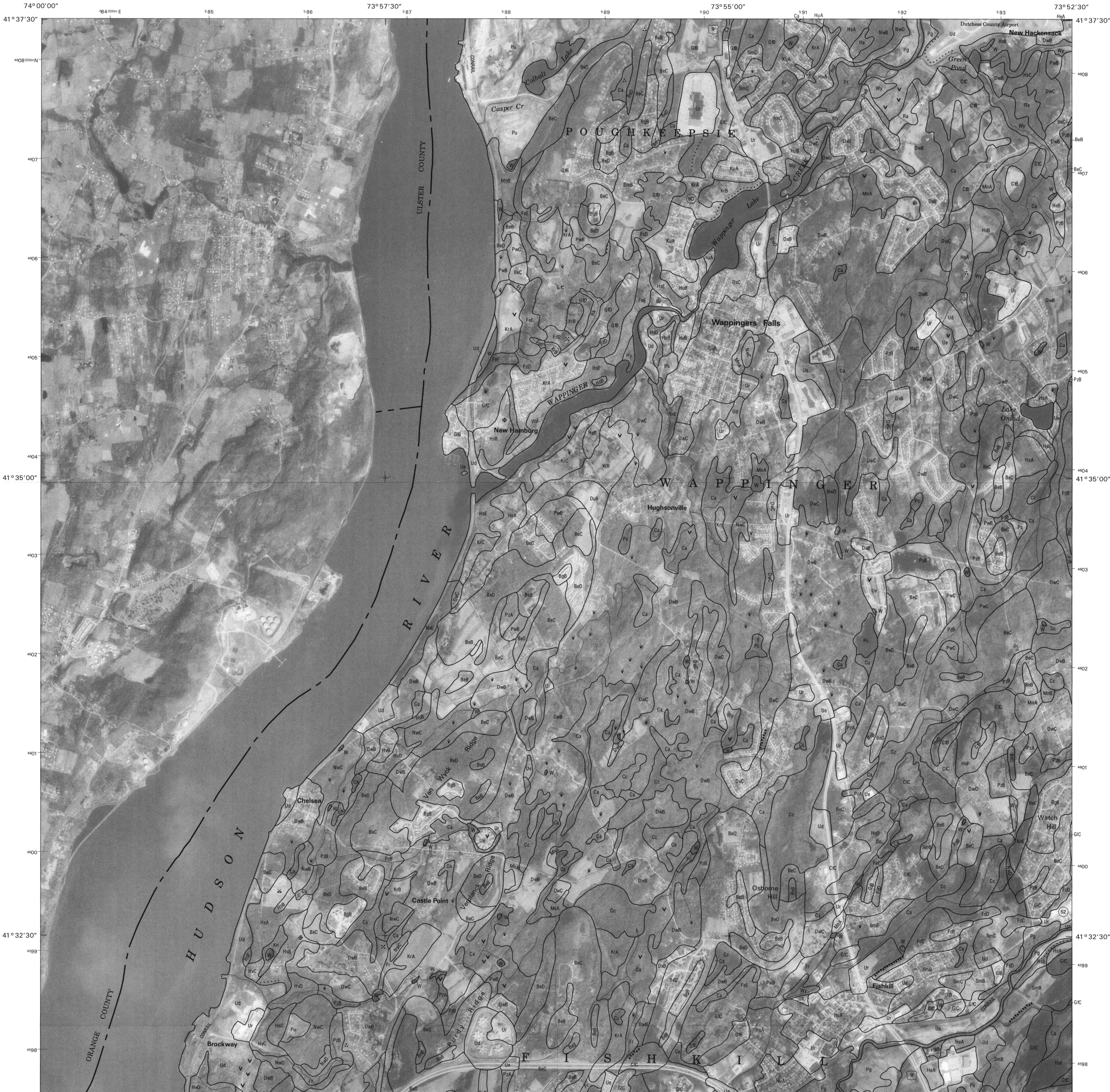
DOVER PLAINS, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 18 OF 24



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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 19

QUADRANGLE LOCATION

WAPPINGERS FALLS, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 19 OF 24

1	2	3
4		5
6	7	8

1 CLINTONDALE
2 POUGHKEEPSIE
3 PLEASANT VALLEY
4 NEWBURGH
5 HOPEWELL JUNCTION
6 CORNWALL
7 WEST POINT
8 OSCAWANA LAKE

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NORTH

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 20

QUADRANGLE LOCATION

HOPEWELL JUNCTION, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 20 OF 24

1	2	3
4		5
6	7	8

1 POUGHKEEPSIE
2 PLEASANT VALLEY
3 VERBANK
4 WAPPINGERS FALLS
5 POUGHQUAG
6 WEST POINT
7 OSCAWANA LAKE
8 LAKE CARMEL

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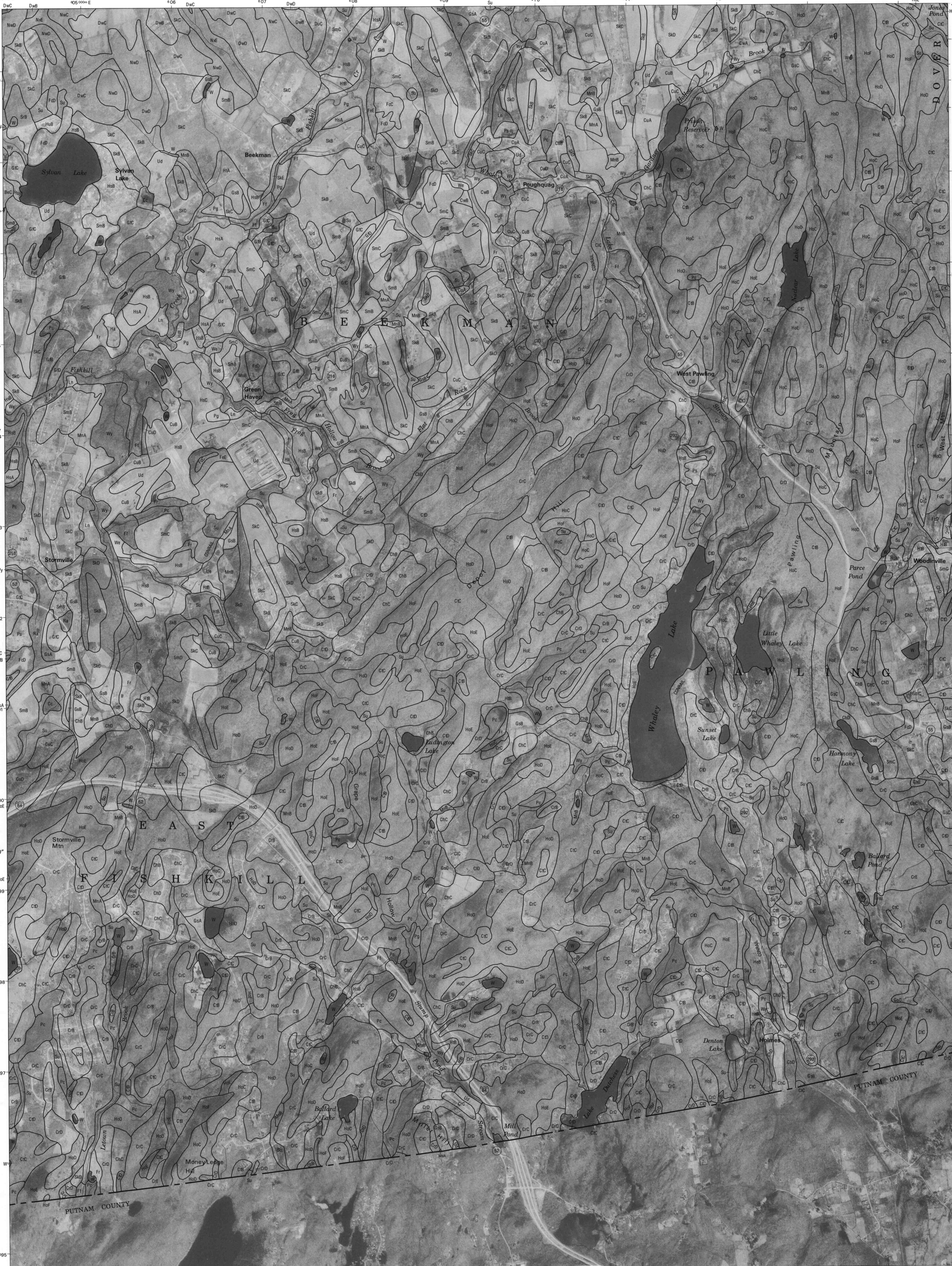

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 21

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 PLEASANT VALLEY
2 VERBANK
3 DOVER PLAINS
4 HOPEWELL JUNCTION
5 PAWLING
6 OSCAWANA LAKE
7 LAKE CARMEL
8 BREWSTER

INDEX TO ADJOINING 7.5 MAPS

POUGHQUAG, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 21 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 22

QUADRANGLE LOCATION

1 VERBANK
2 DOVER PLAINS
3 KENT
4 POUGHQUAG
5 NEW MILFORD
6 LAKE CARMEL
7 BREWSTER
8 DANSBURY

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PAWLING, NEW YORK

7.5 MINUTE SERIES
SHEET NUMBER 22 OF 24

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
WEST POINT QUADRANGLE
SHEET NUMBER 23 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 23

QUADRANGLE LOCATION

WEST POINT, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 23 OF 24

1	2	3
4		5
6	7	8

1 NEWBURGH
2 WAPPINGERS FALLS
3 HOPEWELL JUNCTION
4 CORNWALL
5 OSCAWANA LAKE
6 POPOLOPEN LAKE
7 PEEKSKILL
8 MOHEGAN LAKE

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DUTCHESS COUNTY, NEW YORK
OSCAWANA LAKE QUADRANGLE
SHEET NUMBER 24 OF 24

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NORTH

SCALE 1:24000

MILES

FEET

KILOMETERS

DUTCHESS COUNTY, NEW YORK NO. 24

QUADRANGLE LOCATION

OSCAWANA LAKE, NEW YORK
7.5 MINUTE SERIES
SHEET NUMBER 24 OF 24

1	2	3
4		5
6	7	8

1 WAPPINGERS FALLS
2 HOPEWELL JUNCTION
3 POUGHQUAG
4 WEST POINT
5 LAKE CARMEL
6 PEEKSKILL
7 MOHEGAN LAKE
8 CROTON FALLS

INDEX TO ADJOINING 7.5 MAPS